TECHNOLOGY DEPT.

The Chemical Age

VOL LXII 13 MAY 1950 No 1609

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DETROIT

"*Mind what you meddles with*—*D. Barclay's grandson seeing something at Higgins' lectures which pleased, was induced to purchase a piece of Phosphorus, this carefully closed in paper he carried in his breeches pocket, till it suddenly inflamed and burnt his thigh so terribly that he has been in danger of losing life or limb but is now said to be in a fair way.*"

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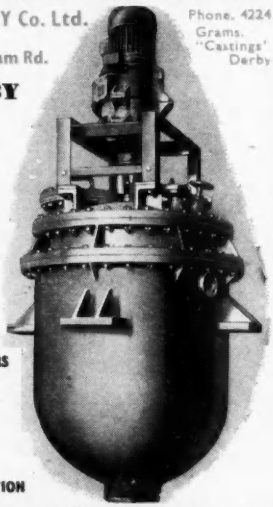

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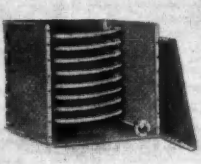

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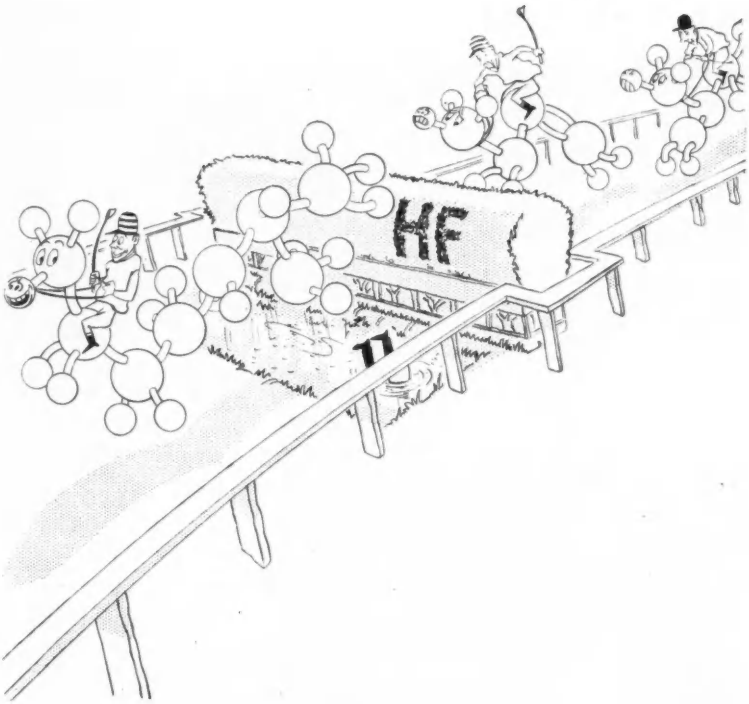

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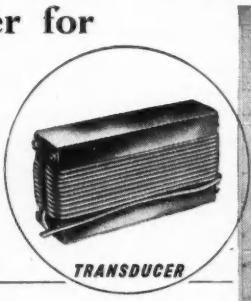

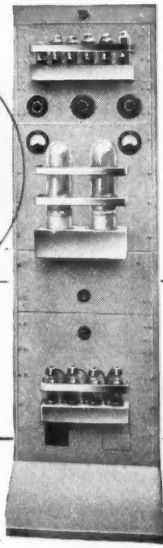

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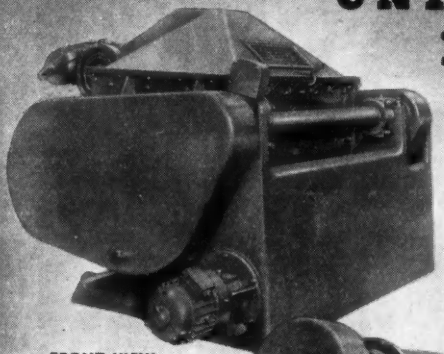

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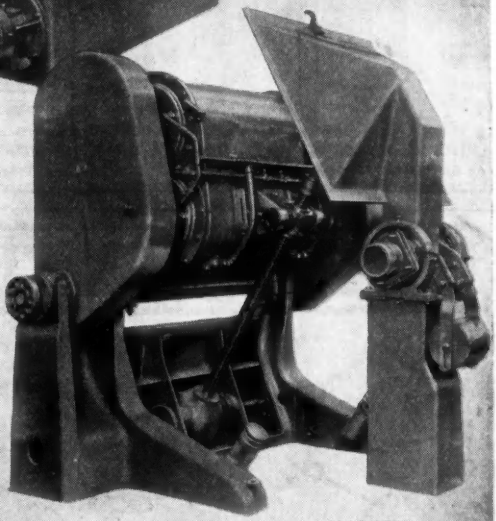

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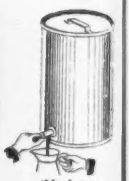

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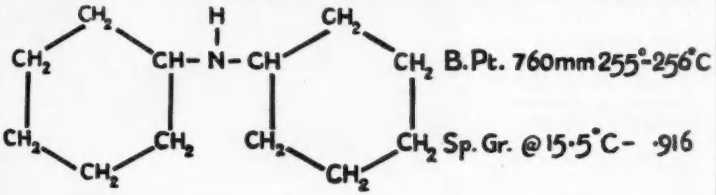

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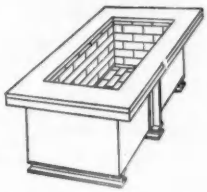

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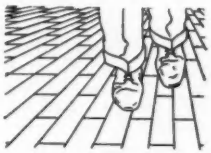

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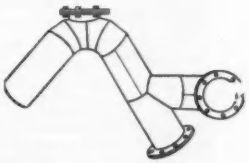

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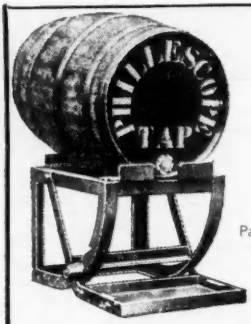

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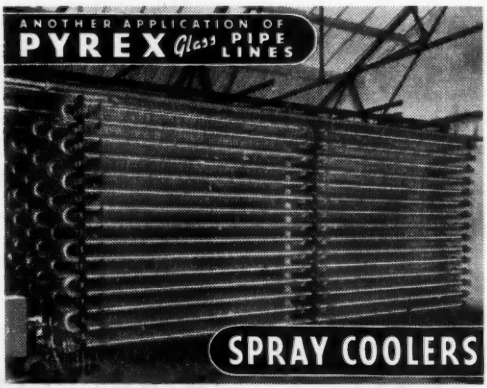

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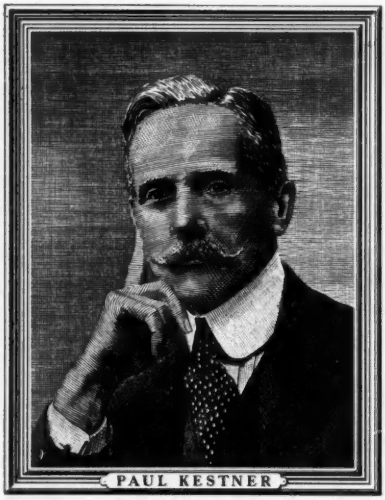

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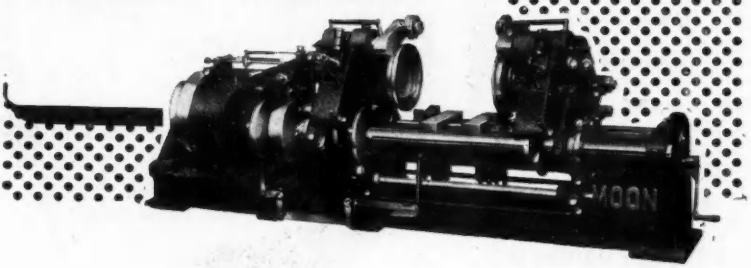

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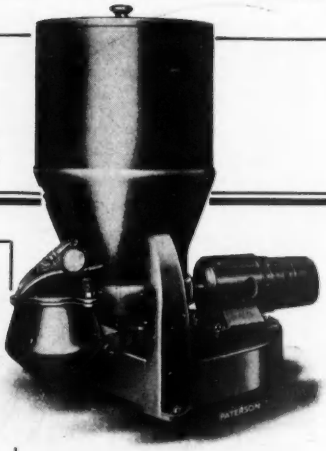

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Dressing the Window

THE 29th British Industries Fair has revived in an acuter form than ever the problems of adequately representing chemicals of many kinds in a way which will please the eye of the general observer without repelling by its irrelevance the more exacting attention of the technical visitor. It can fairly be said that in the chemicals section of the fair which opened at Olympia, London, on Monday, practically all exhibitors have reached as happy a compromise as the familiar difficulties allow. All the large stands are decorative and adequate contributions to what it is customary now to regard as "Britain's shop window" and the section itself is a dignified outward symbol of the great economic and social force represented by Britain's increasingly virile chemical industries.

That certainly is the impression which will have been made on the substantial numbers of overseas visitors who have toured the BIF this week, providing a record attendance on the opening day, when 1150 passed through the turnstiles at Olympia and Earls Court in two hours. The total next day was 13,040.

The old problem of presenting in public what are usually the starting materials of a host of commodities, many of which reveal nothing of their origins is, however, very far from being resolved. It is very noticeable that the majority of large exhibitors this year have admitted that it is virtually impossible to make a compelling and comprehensible display of industrial chemicals alone. Few of the supplies of industry reveal so little of their qualities and uses as the white solids—powder or crystals—or the water-white or amber liquids, which are the forms in which a very large proportion of chemical materials and intermediates are delivered to industry. Almost all their qualities, such as the familiar "99.9 per cent" label decorating so many of the flasks, are perversely imperceptible.

Since the first post-war exhibition in 1947, the policy underlying chemical manufacturers' displays at Olympia has been to subordinate chemical products as such to suggestive representations of end uses and the increasingly ingenious productive processes by which they are made available. That principle has produced some excellent and memorable results and continues to do so. The several excursions seen at last year's British Industries Fair into a realm verging on Piccasso-like symbolism do not appear to have commended

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themselves, and their absence from the Olympia stands this year will probably not be regretted.

Restraint now would appear to be the guiding principle of the 1950 attempt to present British industrial and fine chemicals and photography, illuminated flow sheets and the like, have in many instances replaced chemicals as the dominant characteristics of stands. The notable exceptions are those companies whose production range includes pigments or dyestuffs, where the immediate appeal of the strong, pure colours now achieved by chemical ingenuity has greatly heightened the attractiveness of the whole section. Elsewhere, as in the principal exhibit of I.C.I., Ltd., the predominant aim has been to publicise the world-wide ramifications and services of the parent organisation.

While all these expedients have been employed with increasing skill and effectiveness and have doubtless contributed in encouraging the marked activity seen in the chemical industries' stands since the Fair's opening, this year has brought to mind with more than usual force some defects inherent in the BIF as a market place for United Kingdom chemicals. Many chemical manufacturers have in fact long since ceased to regard the exhibition in that light and their continued participation in the BIF is certainly not influenced by the value of orders directly attributable to the fair. That the BIF can confer on exhibitors other benefits, rather less tangible, is scarcely open to doubt, and if it were the continued adherence of most of the large chemical groups, which are not prone to disburse several thousands of pounds for frivolous reasons, would seem to settle the point.

Increasingly, however, the BIF is becoming the show place of the large chemical undertakings or of group exhibits. According to the official records issued by the fair authorities, there has been a significant expansion of the space used to display chemicals at Olympia this year, while the number of exhibitors has diminished. The reduction in the number exhibiting is in fact considerably less drastic than might be inferred by the official total of 59 (against 69 in 1949). Because increased use has been made of the practice of sharing stands the products of some 62 U.K. chemical enterprises are now on show at Olympia. There are, however, a few whose absence from this year's fair is

(*continued on page* 704)

Notes and Comments

Freight Rates and Prices

ONE of the factors which have helped to attract foreign buyers to the chemical, plastics and engineering sections of this year's BIF is the prospect that the cheaper £ and the general improvement in production technology would result in competitive prices. That promise has been fulfilled in many cases and the revelation, virtually coinciding with the Fair's opening, that the welcome price trend may now be reversed in a number of categories as a result of Government action in relation to transport could not have occurred more inopportunely. The immediate cause is the knowledge that from Monday next railway freights will be raised by 16⅔ per cent. The effect which that may be expected to have upon a large sector of chemical products involving bulk carriage was recognised by substantially increased buying in the chemical markets last week and this. The reality of that prospect has now been confirmed by the news this week that the Government-regulated prices of fertilisers are being raised on Monday by amounts ranging from 2s. 6d. per ton for superphosphates to 4s. for sulphate of ammonia. That certainly does not represent the full extent of the changes which must follow the imposition of a " railway tax " upon the production of the heavy industries. The British Iron and Steel Federation this week supplied another instance of the effect of this burden, revealing that steelmaking costs will rise by approximately 10s. per ton. Perhaps the most significant fact in that connection is that the independent steel industry has decided to bear the extra cost itself, being reluctant " to aggravate further the spiral of inflationary price increases."

More Scope for Scientists?

THE rare Parliamentary phenomenon of almost complete agreement between the Government and the Opposition was produced last week by a private members' motion for the fullest encouragement of what is generally indicated by the term " science in industry." " Science " in that context generally stands for applied chemistry and engineering; but the uncertainty whether science or technology was the main objective did not prevent both sides of the House giving convincing evidence of Parliament's benevolent intentions towards the people who employ the scientific method in providing answers to industry's problems. The motion by a Labour Party member (Mr. M. P. Price), which a Conservative member (Mr. Erroll) seconded, would have given more satisfaction and stimulus to research people as a whole had it been in more concrete terms. The fact, however, that the House accepted without a dissentient voice the proposition " That there should be the fullest development and utilisation of Britain's exceptional scientific resources and manpower . . ." can be taken as the equivalent of a vote of confidence in the principle of scientific direction in industry. From that position to the allocation of considerably more generous grants to the research and training institutes is not an impossibly long step.

" Something in the Finance Bill "

THE customary spokesman on scientific affairs in the Commons, Mr. Herbert Morrison, did not give much encouragement for the hope that any revolutionary change is to be expected in the Government's view of its responsibility to stimulate scientific advances and their use in industries. The most promising passage in the Lord President of the Council's contribution was the indication that the House would shortly hear " something in the Finance Bill " relating to expenditure on scientific research and its applications in industry, which he said always received specially favourable con-

sideration by the Treasury. The Lord President of the Council's apparent complacency about the rate of advance in these directions seems to have afforded a marked contrast with the urgent desire of ordinary members on both sides to see the Government adopt a much more positive policy towards the practical problems of the development of research resources and individual projects. Nothing was said of what would undoubtedly be the most direct means of stimulating the kind of research of immediate benefit to productiveness—a generous revision of taxation allowances to encourage the fullest employment of industrial laboratories and the most advanced equipment.

Towards International Standards

THE growing significance in the field of chemistry of therapeutic materials has been self-evident for a long time, but little attention has commonly been paid, except among the specialists, to the need to regulate the use and standardise the remarkably potent new substances, of which the antibiotics and the anti-pernicious anaemia factor vitamin B_{12} are among the more celebrated examples. The principal agency working to prevent the chaos and the probable discrediting of some of these boons to humanity, which faulty preparation and misuse would invite, is now holding its third international assembly in Geneva. That is the World Health Organisation, newest of the groups within the United Nations Organisation, which is rapidly formulating a code for virtually all countries, except those whose isolation has been enforced by the U.S.S.R., which should ensure that these new drugs and others are of uniform purity and potency. That ideal is safeguarded here by Acts of Parliament, but similar precautions against the substitution of sub-standard preparations in other parts of the world are often lacking. The work now being reported and implemented at Geneva is a most important continuation of the pioneer work of the League of Nations Health Organisation, which had standardised more than 30 therapeutic substances when the last war interrupted it. WHO, fortunately, has several responsible collaborators around the world in securing international recognition of biological and chemical standards, including the Internatonal Union of Chemistry. Not the least important phase of this exacting and indispensable undertaking is the preparation, for issue this year, of the first International Pharmacopoeia which will lay down international standards of identity, quality, strength and purity of more than 200 drugs. To this the essential data on antibiotics will be added later, in view of the advances still being made in this field. The first volume, which will be in English, French and Spanish, represents only the initial stage in a great project, calculated ultimately to confer real benefits on world health services and pharmaceutical industries.

DRESSING THE WINDOW

(*continued from page 702*)

conspicuous. Among these are May & Baker, Boots Pure Drug Company, and the North Thames gas undertaking.

Any estimate of the effectiveness of the BIF as the showplace for British chemical products must pay regard to the absence of any adequate alternative opportunity of meeting overseas buyers and technologists on our own ground, and the very serious difficulties which would encompass any attempt to provide one. By the successful operation of the co-operative principle under Government auspices and the employment of some indispensable State resources this annual show of British chemicals receives a fuller measure of support in the form of overseas advertising and publicity than any sectional exhibition could economically procure. This year, moreover, there is already some evidence that the lowering of British prices as an effect of devaluation and the increasing scale of production and efficiency is exciting as much interest as could be aroused by displays appealing more directly to the industrial chemists.

EXPORTABLE CHEMICAL SURPLUSES

Record of British and European Balances

THE Organisation for European Economic Co-operation (OEEC) has published a book of over a hundred quarto pages on the subject of the exportable surpluses of chemical products in the 18 participating countries. It is printed throughout in French and English, the two texts being on opposite pages. Actual details are given only in regard to Austria, Belgium, France, Germany, Ireland, Italy, Luxemburg, Norway, The Netherlands, Sweden, Switzerland, Trieste, and the United Kingdom, the only countries which had, at the time the memorandum went to press, replied to the organisation's questionnaire.

Exportable surpluses are defined as follows: Actual surpluses are stocks not covered by orders (not including working stocks); potential surpluses represent that part of working capacity unused owing to lack of demand.

Britain did not provide precise quantities of surpluses either at a given date or in the form of regular monthly estimates, but indicated whether the supplies for export were "limited," "adequate" or "ample." The three terms are defined as follows: "Limited" means that some, but not all, of the export demand can be met; "adequate" means that all the export demand of which the United Kingdom is aware can be met; "ample" means that all the export demand of which Britain is aware can be met as well as any reasonable additional demand.

Britain's list of chemicals under the heading of "limited" is a very long one, and includes such items as carbon blacks, solid caustic soda, zinc oxide, titanium oxide, chlorates, alums, white lead, lithopone, calcium carbide, benzene, toluene, acetic acid, stearic acid, etc. Streptomycin is included with the "limited" items, with the remark "more later in the year."

Under the heading of "adequate," Britain's list includes, chlorine, activated carbon (certain types), tin oxide (supplies could be increased), sodium hydrosulphite, silicates and metasilicates, naphthalene, nitroglycerin, cresol (most grades), ethyl ether (sulphuric ether), tricresylphosphate (plasticiser), etc.

"Ample" exportable surpluses are stated to exist in Britain of a large number of items, including the following: Copper sulphate, arsenates, sodium carbonate, sodium bicarbonate, bichromates, aliphatic chlorides, hexachlorocyclohexane, DDT, methyl alcohol, stearic and cetylic alcohol, formaldehyde, adipic acid, lactic acid, tartaric acid, acetyl-salicyclic acid, urear, sulphonamides and similar preparations, glucose, penicillin, a long list of phamaceutical products, and most disinfectants and insecticides.

Parliamentary Topics

REPLYING to a question about flour improver, Mr. F. T. Willey, Parliamentary Secretary to the Minister of Food, stated that while the use of nitrogen trichloride or agene was being discontinued, he did not propose to insist on the exclusive use of chlorine dioxide for this purpose.

DURING the debate on the motion by Mr. Philips Price urging that the fullest use should be made of Britain's scientific resources, Mr. Herbert Morrison, Lord President of the Council, again referred to the scheme sponsored by the Royal Society to house in one building the three great research bodies—the Department of Scientific and Industrial Research, the Medical Research Council, and the Agricultural Research Council—the Royal Society and a number of other scientific and learned bodies and make a really great centre of science on a worthy site in London. This would be well worth doing.

POSSIBLE danger to the consumer of strawberries from the Continent which had been sprayed with one of the new insecticides based on the organic phosphorous compound parathion was mentioned by Sir George Jeffreys. Replying for the Minister of Food, Mr. F. T. Willey, Parliamentary Secretary, stated that so long as this compound was used in accordance with instructions of the manufacturers there was no danger to consumers. Medical officers of health at sea and airports already had power to examine foodstuffs on arrival, but the Minister was considering whether to give these officers special advice about imported strawberries.

NEW BRITISH STANDARDS

Solvents and Allied Products

A NEW series of standards for solvents and allied products is being issued by the British Standards Institution and the first 18 have now been published. Most of these are revisions of standards issued between 1933 and 1936, but the last three are completely new. The list is as follows:

BS. 506; 1950 methyl alchol; 507 ethyl alcohol (ethanol); 508, normal butyl alcohol (butanol); 509, acetone; 549, diacetone alcohol; 551, normal butyl acetate; 552, amyl acetate; 553, ethyl acetate; 573, dibutyl phthalate; 574, diethyl phthalate; 575, carbon tetrachloride; 576, acetic acid; 580, trichlorethylene (types A. B.and C); 662, carbon disulphide; 663, ethyl lactate; 1593 perchlorethylene; 1594, diacetin (glyceryl diacetate); 1595, isopropyl alchohol (isopropanol).

Interchangeable conical ground glass joints are the subject of B.S. 572: 1950, which revises the 1934 edition of this standard. The number of joints has been reduced from 68 to 35 by omitting the whole of series A, and other joints which experience has shown to be little used. Three new sizes have been added in series C for certain purposes such as flask stoppers, for which the previous range was insufficient. Some minor changes of length have been made but the joints remain interchangeable with those specified in the original standard. The appendix on gauging has been revised and a table included of dimensions and tolerances for gauges for each size of joint.

Vegetable Oils

To provide a more convenient form of document, standards for vegetable oils have been revised and are now incorporated in one volume, which covers B.S. Nos. 628/32 and B.S. 650/56. Detailed specifications covering physical characteristics for each of the oils and methods of test are given.

Methods contained in the original B.S. 684, first published in 1936, were the English translation of the French text of methods prepared by the International Commission for the Study of Fats, and were published to assist in promoting uniformity among nations in regard to the analysis of fats. British methods were considered by the International Commission for the Study of Fats in preparing the third edition of the internationally agreed methods (1948), the English translations of which are included in the revision of this standard now issued. It is recognised that, even so, B.S. 684 does not provide a complete set of methods for the analysis of oils and fats, and it is hoped shortly to publish a separate document covering further methods.

AUTOMATIC MEASUREMENT

NPL Work on Sieve Meshes

THE part of the National Physical Laboratory in providing technical assistance to chemical and many other industries includes research in almost any direction calculated to improve the physical characteristics of the instruments which serve them.

The NPL has now developed an apparatus for the automatic determination of the statistical distribution of wire-spacing in sieves. It is designed to measure the spacing between successive warp or weft wires and express the result in terms of the statistical distribution of the actual wire spacings in relation to the nominal.

Sieves of 300 to 10 mesh in. can be measured. In the case of screening material, it is, of course, the size of the largest holes as compared with the nominal which is more important.

A 100-mesh sieve which is woven on a loom in the normal way and has fairly even spacing between the warp wires, is liable, however, to have greater space variations between the weft wires. A representative of THE CHEMICAL AGE was shown how such a sieve is measured.

The width of each mesh in a 2-in. row is measured in a single operation. To obtain a reliable indication of the quality of the sieve, measurements are taken across the warp and weft wires.

The sieve is projected on to a screen, with an optical magnification of 40. An optical head is then traversed over it by a motor-driven micrometer lead screw. The lead screw is geared to a pulse generator which gives pulses proportional to the movement of the optical head.

Electronic Counter

As the optical head traverses the sieve, the width of each mesh is measured by counting the pulses which occur. To signal the start and finish of each mesh a very small mirror on the screen reflects the image on to a fine slit, .0015 in. wide by 3/16 in. long, in front of a photo-multiplier cell.

The pulses are recorded by an electronic counter, the count being controlled by a signal from the photo multiplier as the edge of the wire on each side of the mesh passes the slit. When each mesh has been traversed the width is given in terms of the number of pulses counted.

During the passage of the wire across the slit, a sequence of operations is started, which allows time for relays in

(*continued at foot of page* 708)

RESEARCH ON FLAME RADIATION

International Study of Heat Transfer Factors

PHYSICISTS, engineers, chemists and statisticians of France, Holland and Great Britain, to be joined later by a Swedish scientist, are co-operating in an investigation of the factors affecting luminous flame radiation, using an experimental furnace in the Royal Dutch Steelworks at Ijmuiden, Holland. Observers from the U.S.A. are expected to visit the trials at a later date.

Flame radiation is of great importance in relation to the mechanism of heat transfer in furnaces and boilers, but very little is yet known on the subject. A statement by the British Iron and Steel Research Association now recalls that at the end of 1948 it was decided to start this joint research and the Royal Dutch Steelworks made available their experimental furnace. That was built in 1947/48 for the study of the radiation from oil flames of a size comparable with those in open-hearth steelmaking furnaces.

During 1949 three teams were built up in Holland consisting of physicists from the British Iron and Steel Research Association, United Steel Companies and Pilkington's from Great Britain; from IRSID, the Institut du Petrole, Air Liquide and the Laboratoire des Hautes Temperatures from France; and from the Royal Dutch Steelworks and the Royal Dutch Shell Oil Company (BPM) who also supplied all the reference oil for the tests.

The general plan agreed on for the research was that two kinds of trial should be carried out, termed respectively "engineering" and "scientific" trials.

Measuring the Factors

In engineering trials a large number of independent variables such as fuel rate, kind of fuel (various oils, pitch, pulverised coal, coke oven gas), kind of burner or port, excess air ratio, etc., are altered systematically and a limited number of radiation, temperature and combustion properties of the flame are measured for each flame setting.

In scientific trials a relatively small number of different flame settings are to be studied in great detail by means of probes so that, for example, the course of combustion of individual droplets, the mechanism of soot formation and the emissivity and temperature of different parts of the flame can be elucidated in detail.

Statistical methods have been used to plan the first series of engineering trials. It was decided to choose five variables (creosote pitch *versus* oil, high and low combustion air rate, high and low fuel rate, high and low atomising medium flow rate, and air *versus* steam as atomising medium) and to carry out 48 trials according to a factorial scheme. This has been the first attempt to apply to a large-scale furnace these methods of designing experiments, which were originally developed for agricultural trials.

Successful Trials

Thanks to extremely hard work and ingenious improvisations on the part of the international team, 47 out of these 48 trials have been successfully completed. The results are now being worked out and are expected to provide valuable scientific information, and also to indicate the next step.

The work is supervised by committees set up in the three countries, each supported by many firms and organisations in their own country. The chairmen are:—

France: Prof. G. M. Ribaud, Membre de l'Institut, director of research of the French gas industry, and director of the Laboratoire des Hautes Temperatures.

Great Britain: Prof O. A. Saunders, Imperial College of Science and Technology, chairman of the Heat Transfer Committee of the Mechanical Engineering Research Board, and of numerous other committees dealing with heat transfer.

Holland: Mr. J. E. de Graaf, chief of research of the Royal Dutch Steelworks, who was responsible for the conception of the experimental furnace.

A joint committee of the three countries has been set up to co-ordinate the work, with Prof. Ribaud as chairman, and each national committee has appointed two representatives. In charge of the studies included in the research programme is Mr. M. W. Thring, head of the British Iron and Steel Research Association's physics department.

[Other organisations or firms wishing for further information, or to take part in the work of the joint committee should write to: The Secretary, The Flame Radiation Research British Committee, c/o BISRA, Physics Laboratories, 140 Battersea Park Road, London, S.W.11.]

Basic Chemicals in February

Improvement Maintained in Production and Stocks

THE steady increase in production of basic chemicals and non-ferrous metals which marked the start of the year was maintained in February, levels being higher throughout than in the same month of last year. Stocks also improved, with the exception of molasses and industrial alcohol. Consumption, except in a few cases, was higher than in February, 1949.

Estimated numbers employed in the chemical and allied trades, with a total (in thousands) of 445.4, remained the same as the first month of this year, but was 14.3 higher than in February, 1949. Distribution of workers was as follows: coke ovens, chemicals and dyes, explosives, etc., 257.4 (188.6 men, 68.8 women); paints and varnishes 38.2 (27.1 men, 11.1 women); oils, greases, glue, etc., 67.5 (54.1 men, 13.4 women); pharmaceuticals, toilet preparations, etc., 82.3 (42.7 men, 39.6 women).

The figures and the table below are abstracted from the *Monthly Digest of Statistics*, No. 52 (HMSO, 2s. 6d.).

	February, 1950 Thousand Tons			February, 1950 Thousand Tons		
	Production	Consumption	Stocks	Production	Consumption	Stocks
Sulphuric acid	136.2	144.0	—	126.5	134.0	—
Sulphur	—	26.2	85.6	—	22.9	66.3
Pyrites	—	17.4	78.0	—	18.0	63.0
Spent oxide	—	15.6	181.1	—	15.4	168.0
Molasses (cane and beet)	8.1	35.0*	254.3	7.3	19.4*	269.3
Industrial alcohol (mil. bulk gal.)	2.41	2.58	0.67	1.39	2.17	6.28
Ammonia	—	7.06	5.57†	—	6.96	5.95†
Superphosphate	18.5	25.4	—	18.4	21.1	—
Compound fertiliser	167.4	212.0	—	150.6	204.5	—
Liming materials	—	408.8	—	—	352.9	—
Nitrogen content of nitrogenous fertilisers	20.97	24.13	—	20.02	22.38	—
Phosphate rock	—	86.0	221.8	—	89.6	165.5
Virgin aluminium	2.30	13.0	—	2.40	16.5	—
Virgin copper	—	26.8	119.3	—	27.3	105.1
Virgin zinc	5.50	19.4	48.2	5.04	16.9	39.8
Refined lead	5.47	12.7	64.1	3.96	12.4	23.0
Tin	—	2.17	—	2.37	1.97	18.8
Zinc concentrates	—	12.5	63.8	—	11.8	27.6
Magnesium	0.32	0.33	—	0.37	0.44	—
Pig iron	184.0	147.0	517.0	181.0	140.0	265.0
Steel ingots and castings (including alloys)	325.0	—	1,257.0	311.0	—	1,000.0
Rubber: Reclaimed	0.51	0.49	2.36	0.37	0.45	3.97
Natural (including latex)	—	4.64	41.8	—	5.25	45.1
Synthetic	—	0.06	1.13	—	0.05	1.87

* Distilling only. † January.

AUTOMATIC MEASUREMENT

(*continued from page* 706)

the electronic counter circuit to operate, passes a current through them to operate an electromagnetic counter, and finally resets the electronic counter to measure the next mesh.

There are 22 electromagnetic counters, 20 of which represent size groups 2, 5 or 10 per cent of the nominal size of mesh for a specific setting. The remaining two counters record the number of meshes above or below the range covered by the other 20. At the end of the 2 in. traverse, every mesh in the section has been measured, the distribution of sizes being shown on the counters.

The setting of 2, 5 or 10 per cent groups is fixed according to the fineness of mesh and its quality, finer meshes requiring the larger groupings. Measuring speed is approximately 1 mesh per second. The apparatus has not yet been tried on fabric sieves and it is uncertain whether such an application would prove satisfactory, since loose fibres might confuse the results. It is adaptable, however, for measuring parts of a complete roll of sieve material, which may be 4 ft. wide.

Demonstrations at the Physical Society Exhibition attracted considerable attention, inquiries being received from research institutions and from chemical manufacturers and the cement and dyestuffs industries.

The apparatus is expensive but, at a centre such as the National Physical Laboratory, it could be used for testing sieves on behalf of manufacturers and users. The data obtained from such tests will enable the quality of present-day sieves to be appraised.

IMPRESSIONS OF THE 29th BIF

CHEMICALS & INSTRUMENTS IN LONDON

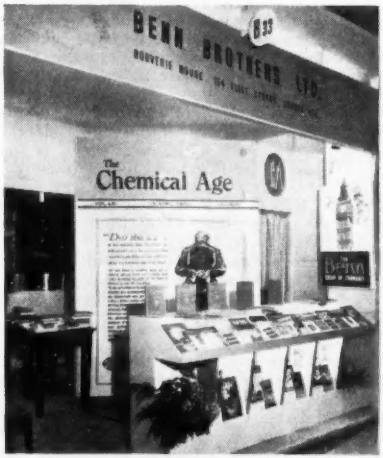
THE opening stage this week of the 29th British Industries Fair revealed some interesting contrasts with the last fair. While attendance on the opening day cannot be taken as being a reliable indication of the general level of interest, the comparison of numbers registered on Monday and on the opening day on the last occasion appeared to show a noteworthy change in the distribution between home and overseas visitors. Attendance from overseas at all three centres on the first day was markedly larger than in 1949, proportionately the largest increase being recorded at the engineering and allied sections at Castle Bromwich, Birmingham, where the 352 visitors contrasted with 261 last year. At Olympia the foreign contingent numbered 1587, against 1541 last year, and at Earls Court 1485, against 1216. At both the London centres the number of home buyers was smaller than last year's: 4723 at Olympia (5157) and 3871 at Earls Court (5059). Castle Bromwich alone received more attention from the same quarter than it did last year—1961, compared with 1759. Much more substantial figures for the three centres were recorded on Tuesday: home buyers 10,563; overseas 3511.

Olympia, as the principal centre of interest for science and industrial chemistry, gained much of its attraction for people from overseas from the representation within the Scientific Instruments Manufacturers' Association group exhibit of the considerable advances made in electronic and electric apparatus and optical and measuring equipment. Nearby, the first comparatively revealing representation of Britain's largest atomic pile—BEPO, shown as a 9 ft. high "working" model—appeared to form the source of principal interest to visitors from other countries.

The slight reduction—to 62—in the number of exhibitors of industrial chemicals this year has permitted a more liberal use of space, of which effective use has been made by individual exhibitors. There are, however, probably fewer chemicals physically represented than at previous exhibitions. In their place, emphasis has been laid upon the considerable improvements which have been made in technical qualities and graphic representation of advanced production methods and the rewarding use of the chemical products in many departments of industry. The more competitive prices made possible in some directions by changed currency values was expected to afford some stimulus to actual sales.

Among the new or modified products noted in the displays of instruments and chemicals were these:—

ON the stand of W. & J. GEORGE & BECKER, LTD., interest this year is centred on its new aperiodic balance, being shown for the first time. This has a capacity of 200 gm. and is sensitive to 0.1 mg. The weights up to 100 gm. are applied auto-



At Olympia

"C.A." STANDS

THE CHEMICAL AGE *and companion journals of Benn Brothers, Ltd., are represented at the British Industries Fair in London at Earls Court and Olympia, and Castle Bromwich, Birmingham. The following telephone numbers have been allotted to the various stands:—Stand X13, Earls Court, FULham 8292; Stand B33, Olympia, RENown 5162; Stand A427, Castle Bromwich, FAIR 213.*

matically by means of a weight change mechanism (the subject of a patent application) which is entirely new and simple to use. There are only three dials to operate: one for the 10 gm. to 90 gm. weights (in steps of 10 gm.) another for the 1 gm. to 9 gm. series (in steps of 1 gm.), the third controlling the two ring weights of 300 and 600 mg. respectively.—**Stand C61, Olympia.**

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SCIENTIFIC and optical glassware exhibited by CHANCE BROS., LTD., at Olympia in the SIMA section includes a wide range of articles, such as cathode-ray tubes for television, precision bore tubing for use in pump cylinders hypodermic syringe barrels, viscometers, thermometers, etc. Also shown are all-glass syringes made with interchangeable parts, optical glass slabs, mouldings, colour filter glass, microscope cover glasses, Flamemaster hand torches for use in light welding and glass working with gas/air or gas/oxygen, etc. The stand in the Birmingham section of the fair of Chance Bros., Ltd., includes submersible electric pump units, and a feature there is the Chance square beam airport location beacon, which is being exhibited for the first time. This is stated to have a luminous range up to 60 miles under clear weather conditions. The Earls Court stand of this firm is devoted to examples of its wide range of domestic glassware and building glass.—**Stand C32, Olympia; S11, Earls Court; C622, Birmingham.**

* * *

THE instruments shown by CINEMA-TELEVISION, LTD., demonstrate the many applications of electronics to both research and industry. A new range of portable metal detectors incorporating improvements to the firm's original models are being shown for the first time. Among the instruments being demonstrated is the industrial electronic metal detector for locating minute pieces of ferrous or non-ferrous metal in foodstuffs, plastics, confectionery, etc.—**Stand C16, Olympia.**

* * *

AMONG the laboratory glassware and chemical apparatus exhibits at the Olympia sections is that of H. J. ELLIOTT, LTD., which is showing several improved types of equipment additional to those exhibited at the 1949 exhibition. These include a stoppered measuring cylinder, with an increased width of neck, making for faster pouring and easier cleaning after use. There is also a fully comprehensive range of the firm's other products, which embraces apparatus with the exclusive chemically resistant coloured fillings in the graduations, and the patented E-MIL plastic stoppers for measuring flasks and cylinders.—**Stand C29, Olympia.**

* * *

EXAMPLES of oils before and after treatment with fullers' earth can be seen at the Olympia stand of the FULLERS' EARTH UNION, LTD. Exhibits include natural fullers' earth used as a base for insecticide powders, pigments, pharmacy and bleaching oils; Fullbent for making emulsions and suspensions and Fullbond for bonding foundry moulding sands. The last named is displayed in more detail at Birmingham.—**Stand B18, Olympia, and D117, Castle Bromwich.**

* * *

IN the scientific instruments section at Olympia, HILGER & WATTS, LTD., is showing (in conjunction with other constituent members of SCIEX) a selection of its latest survey and drawing instruments, a new series of precision scales and microscopes, and an optical scale Dubosq colorimeter. At Birmingham, Hilger & Watts, Ltd., is showing (on the stand of Alfred Herbert, Ltd.) an instrument designed to measure the profiles of wire-drawing dies, also a range of engineers' optical measuring instruments.—**Stand C56, 57 and 58, Olympia, and D319 and 216, Birmingham.**

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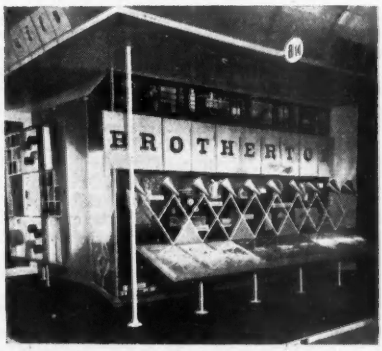
OVERSEAS organisation is the main theme of the display by IMPERIAL CHEMICAL INDUSTRIES, LTD. Maps and photographs tell how by direct exports of chemicals and non-ferrous metals I.C.I. earns £41 million a year for Britain. Details are given of the company's interests in Africa, Argentine, Australia, Brazil, Canada, India and Pakistan.—**Stand B12, Olympia.**



Part of the colourful display by Brotherton and Co., Ltd., representing the newer dyestuffs

AN UNUSUAL display situated on the boundary of the chemical and jewellery and silverware sections is the stand of JOHNSON, MATTHEY & CO., LTD., as the widespread activities of the firm are linked to both craft and industry. Silver used by the silversmith is linked to the industrial applications of the metal by showing electrodeposited silver in chemical engineering. The gulf between employment of the platinum metals and gold as essential materials in chemical engineering and their use by the manufacturing jeweller is bridged by a display dealing with rhodium as an electrodeposit, in which form it finds extensive use both for decorative and industrial work.—**Stand B40, Olympia, and F9, Earls Court.**

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TWO new pentachlorophenol preparations, Santobrite and Santophen-20, manufactured for the first time in this country at its factory in Newport, Monmouthshire, are contact herbicides featured among the 200 chemicals supplied to industry by MONSANTO CHEMICALS. Special attention is drawn to a group of agricultural chemicals comprising 2, 4-D weed-killer, Niran insecticide, Methasan and Thiurad fungicides.—**Stand B1, Olympia.**

* * *

EMPHASIS on plasticisers is the keynote of the range of organic chemicals displayed by THE WATFORD CHEMICAL CO., LTD. Products include the principal phthalic esters, dibutyl tartrate, butyl oleate and high boiling solvents. Among the fine chemicals the new synthetic caffeine is on view. This will, for the present, be sold at prices in line with natural caffeine and will comply with BP, USP and DAB standards. Full production is expected during the second half of this year. The increased production of ethylene from the new British oil refineries has led to the introduction of a range of polyethylene and ethylene oxide condensation products, for use as non-ionic surface active agents and emulsifiers.—**Stand B43, Olympia.**

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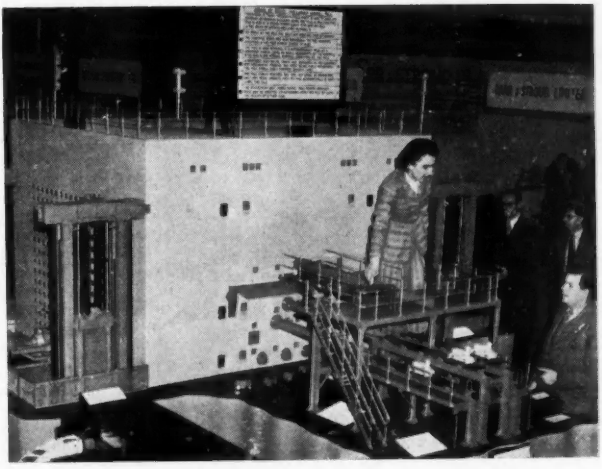
VARIOUS stages in the manufacture of Teepol are depicted by an animated flow chart on the stand of SHELL CHEMICALS, LTD. Flanking the chart are panels bearing descriptions of the process and data regarding the applications of the finished product. The Shell range of ketones and alcohols manufactured at the new chemical plant at Stanlow are also represented, and there is a series of photographs of this plant.—**Stand B22, Olympia.**

* * *

A DRUG for the treatment of leprosy—diaminodiphenylsulphone — now being issued in tablet form under the trade name of Avlosulfon is being given prominence by IMPERIAL CHEMICAL (PHARMACEUTICALS), LTD. It is claimed that considerably smaller doses are required than of sulphones, and that no significant toxic effects are produced. Other exhibits include the trypanocidal drug, antrycide; trilene, an inhalational anæsthetic and analgesic; and sulphamezathine —one of the most widely used sulpha drugs.—**Stand No. B32, Olympia.**



Britain's leadership in Europe in promoting the peaceful uses of atomic reactors was reflected in the Ministry of Supply exhibition of an exact replica of the large pile at Harwell and of the methods of using radiation in industry and of preparing special materials, such as C_{14}

IMPRESSIONS OF THE 29th B.I.F.

CHEMICAL ENGINEERING AT BIRMINGHAM

THE sections of the British Industries Fair at Castle Bromwich, Birmingham, devoted principally to exhibits in the classifications of engineering and hardware, have again offered plenty of interest to the chemical and related trades. There are on show, for example, bench burners for glass working; fine grinders for a variety of chemical materials; furnaces for all heat-treatment processes and laboratory muffles; pumps for oil refineries and chemical works; measuring instruments for chemical engineering precision work; stoneware and porcelain plant for the chemical industry and laboratory; oil fractionating columns; emergency lighting equipment; chemicals for metal treatment; tinning baths.

Attendance at Castle Bromwich on the opening day (Monday) was substantially larger than on the same day last year, and the number of overseas buyers—352—was about 35 per cent higher than last year. Over 1000 buyers (371 overseas) visited the exhibition on Tuesday.

U.S. Markets

A notable feature at Castle Bromwich is the bold attempt to develop trade with the United States, and on the opening day there were many inquiries in all sections in regard to the possibilities of American markets. The presence of U.S. commercial authorities at the Birmingham Fair this year is generally regarded as a welcome innovation. The stand has an illuminated sign, " U.S. Markets ".

Mr. J. Leek, president of the Birmingham Chamber of Commerce, responding to the opening speech of the Lord Mayor of Birmingham at the inaugural function, said it was clear to those who had travelled that Britain was expected to recover.

Mr. J. M. Tully, Agent-General for New South Wales, who also responded, uttered a warning about German competition. He said he had been in Germany and had been astounded at the progress made, particularly in engineering. German firms were visiting all parts of the world, including Australia, and he could see the possibility of a great danger to British industries from that source. While there was undercutting of pay and longer hours were worked, Germany was going to be a great source of danger.

INCLUDED in the exhibits of WILD-BARFIELD ELECTRIC FURNACES, LTD., in its range of horizontal general purpose furnaces, there is one particularly suitable for heat treatment at temperatures up to 1050° C. (1922° F.). This range has been designed to meet the demands of a production schedule for which the smaller light duty furnace is inadequate, and the full-scale production furnace not economical.—**Stand C321 and C220.**

* * *

THE " B-W " vacuum and pressure impregnating plants of BARLOW-WHITNEY, LTD., are self-contained, occupy little floor space, and are easily moved, the company claims. A single autoclave unit is displayed, with storage tank, vacuum pump and compressor set, etc., and designed for varnish, wax or compound impregnation.

The company's hot oil circulators, with built-in circulating pumps, are used for heating extrusion machines, large platens, wax and bitumen troughs, vulcanising presses, jacketed pans and autoclaves, etc., which were originally designed for steam heating. Temperatures up to 500° F. and over are possible. Duplex types for circulating hot and cold oil are manufactured for rapid cooling.—**Stand C210, Birmingham.**

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A MORE robust model of the 14B dumper and a loader of greatly increased versatility are shown by E. BOYDELL & CO., LTD., manufacturers of Muir-Hill equipment. The 14B dumper, claimed to withstand the worst of working conditions, is fitted with a 60 h.p. diesel engine.—**Stand 1301 and 1200.**

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SOME EXAMPLES of a wide range of products manufactured by FREDK. BRABY & CO., LTD., for the chemical, oil, food and agricultural industries are displayed. They include steel drums, perforated metals, aluminium products, galvanised corrugated cisterns, industrial wirework and examples of metal platework. A Gooseneck elevator, which is made by a subsidiary company, the G.C. ENGINEERING CO., LTD., for use in the food industry, is shown in operation.—**Stand B611 and 508.**

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THE Atomill high speed fine grinder, suitable for reducing a wide variety of friable and fibrous materials to products between 8-in. and 300-mesh, is being featured on

the stand of BRITISH JEFFREY-DIAMOND, LTD. The most recent addition to this firm's range of crushing, pulverising and grinding machines is the Midget Atomill. This machine, although originally designed for laboratory work, is claimed to be robust enough for small batch production.—**Stand D526.**

* * *

THE "PYROBAR" heating element, manufactured by THE BRITISH THOMSON-HOUSTON CO., LTD., is said to offer a safe and convenient method of heating by electricity. It consists of a resistance spiral solidly embedded in magnesium oxide and protected from mechanical damage by an outer sheathing. For most applications, the heaters are suitable for direct immersion into liquids and soft metals where chemical action does not affect the tube. They cover a range of temperatures up to 900° C., and units for a wide variety of applications are exhibited.—**Stands C511 and C410.**

* * *

GUIDANCE on the choice of materials to meet the most exacting conditions is available to the chemical engineer from the technical services of the COPPER DEVELOPMENT ASSOCIATION. A great deal of metallurgical data on the casting and working of copper and copper alloys is available, and about 40 technical publications are issued free.—**Stand D230.**

* * *

FOUR important branches of industrial ceramics—chemical stoneware, laboratory and technical porcelain, porous ceramic media and filter units, and electrical porcelain—are represented on the stand of DOULTON & CO., LTD. The centre piece of the exhibit consists of a large absorption tower connected to a 200-gallon reaction vessel by socket and spigot piping. The tower is fitted with a distributing plate, perforated plate and tower packing. The centre cylinder is provided with a glass inspection opening which enables the scrubbing effect inside the tower to be observed. —**Stand D743 and 642.**

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AS AN example of the gas-fired equipment used in industry, THE GAS COUNCIL stand shows a working model (quarter-scale) of a vertical slot furnace for tube and bar heating. The furnace, manufactured by the Incandescent Heat Co., Ltd., Smethwick, Birmingham, is for the heat treatment or re-heating of metals at temperatures of up to 1000° C. It can treat tubes, bars, sections or strips, in quantities up to 10 tons per hour.—**Stands D639 and 538.**

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IN ADDITION to the heavy plant and equipment which is manufactured by G. A. HARVEY & CO., (LONDON), LTD., for the oil industries, the company produces pressure vessels, autoclaves, etc. Some of these and other examples of sheet metal working are shown by the use of photographs.—**Stand B329.**

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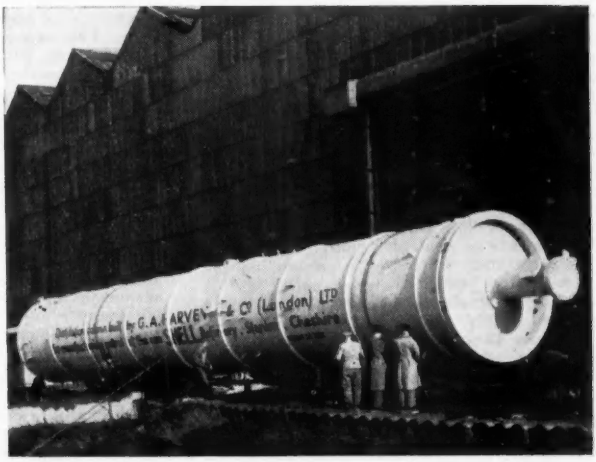
THE exhibit of THE GENERAL ELECTRIC CO., LTD., is divided into three parts, dis-



The problems of showmanship at Castle Bromwich were complicated by the fact that much modern equipment of chemical processing is too massive to house in any exhibition hall. Many firms adopted the photographic method of representation, of which this example was G. A. Harvey's illustration of part of the distillation equipment produced for the new Shell refinery at Stanlow

playing airport lighting equipment, street lighting equipment, and motors, motor control gear and accessories. From the large range of motor production, the G.E.C. is featuring a display of motors for the textile industry; steelworks; motors; a.c. and d.c. industrial motors of all types; motor starters; and electronic equipment for motor control.—**Stands C503 and 402.**

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A NEW neutral heat-treatment salt for use in the range 720-950° C. is demonstrated at Castle Bromwich by the General Chemicals Division of IMPERIAL CHEMICAL INDUSTRIES, LTD. Several trichlorethylene degreasing units are also installed for normal working.—**Stands D315/D212.**

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SPECTROGRAPHIC methods for the analytical control of its products are being shown in a working laboratory unit by the Metals Division of IMPERIAL CHEMICAL INDUSTRIES, LTD. Other features include: the method of laying Kuterlon copper tubes for underground water supplies by means of the mole drainage plough illustrated by photographs and model; and a half-section of double purlin roof built up from channels, angles and corrugated sheet in aluminium alloys.—**Stand D409/308.**

* * *

A SMALL scale model of a modern metal pre-treatment plant is the central exhibit of JENOLITE, LTD. It consists of four tanks; a degreaser, two rust preventative tanks and a hot rinse tank. New products include a paint stripper (PS5) and an aluminium keying solution (AKS), claimed to provide a perfect keying surface for aluminium panels. Only one cold brushing is needed.—**Stand B221.**

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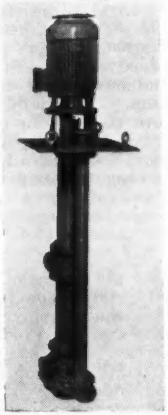
AMONG the instruments shown by LONDEX, LTD., are timers for welding, heating, moulding, curing, ageing and other processes. The company's range of timers comprises condenser-discharge instruments to measure 1/10 to 10 sec.; synchronous instruments to time periods of a few seconds to one week or more, with an accuracy of 0.2 per cent; and cam-type instruments to control a complex sequence of operations. Liquid-level control equipment is represented principally by a working Lectralevel apparatus. This automatically fills, empties or maintains the level in a tank, without the use of a float or moving parts in the liquid. Flow indicators, manufactured by Londex, measure the flow of liquids, such as cooling water and lubricating oil. They can be arranged to maintain a lamp flickering during flow, to give a warning, shut down a machine, start a motor or start stand-by equipment, should flow cease.—**Stand 724.**

* * *

STATIONARY cells for emergency lighting is a prominent feature of PRITCHETT & GOLD AND E.P.S. CO., LTD., stand at Castle Bromwich. The exhibits range from a small cell of 10 a.h. capacity, weighing less than 10 lb., to one of 400 a.h. capacity, weighing more than 2 cwt.—**Stand C702.**



[Courtesy of Sigmund Pumps, Ltd.

Sigma vertical glandless acid pump type WA-N fitted with intermediate bearing

THE wide application of diaphragm valves to serve many chemical processes is being demonstrated by the SAUNDERS VALVE CO., LTD. The expansion of types reflects the large increase in the number and character of liquids employed in industry. To cope with this the company is offering many diaphragms and special bodies—the only other vulnerable part of the valve—in grey or malleable cast iron, in stainless steel, acid resisting bronze or aluminium, or bodies in cast iron, lined with rubber, glass or lead. Pressure operation by remote control is being demonstrated with both piston and air motor operated valves and examples of the various other means of actuation, e.g., handwheel, lever (quick action) extended spindle and chain wheel are being shown. For handling viscous liquids the Type "K" valve with straight-through, full bore provides a practical solution.—**Stand D129.**

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IN an exhibit comprising many different types of centrifugal pumps for industrial,

(continued at foot of next page)

A NEW INDUSTRIAL CHEMICAL

Developing Production of Effective Hydrazine Carrier

THE crystalline, colourless salt, dihydrazine sulphate, is now being produced in commercial quantities for applications requiring the use of hydrazine. It offers some advantages over the more famliar hydrazine acid sulphate as it requires only half as much base to free an equivalent amount of hydrazine and contains 60 per cent more hydrazine. It has a much greater solubility in water.

Dihydrazine sulphate ($N_2H_5)_2SO_4$) is a stable compound and in the dried form has a melting point range of 107-112°C.; if the temperature is increased to 130°C. decomposition takes place with evolution of gas. The salt is freely soluble in water and a 1 per cent solution has a *p*H range of 4 to 5 at 25°C. The sulphate is hygroscopic and when exposed to moisture forms the monohydrate.

The greatest use for dihydrazine sulphate is undoubtedly as a carrier for hydrazine. This base is formed when the sulphate is dissolved in water and the *p*H of the solution so adjusted as to free the hydrazine. This free hydrazine is then available for reactions such as the Curtius reaction for making isocyanates, amines, symmetrical ureas and urethanes from esters.

Other typical hydrazine reactions include the Wolf-Kishner reaction for reducing carbonyl groups to methylene groups or to carbon chains; reaction with active halides to form substituted hydrazines and reaction with carbonyl compounds to produce hydrazones or azines. The preparation of semi-carbazide and aminoguanidine is based on free hydrazine ($NH_2.NH_2$) which can also be utilised for the formation of heterocyclic rings, *e.g.*, production of isopyrazoles from diketones.

Apart from the use of dihydrazine sulphate as a carrier for hydrazine, it has several direct applications, *e.g.*, U.S. Pat. 2,435,537 discloses the use of the sulphate as a catalyst for the polymerisation of vinylidene fluoride. Dihydrazine sulphate appears to offer some promise as a pesticide and herbicide. It is also recommended as an additive for improving the keeping qualities of cut flowers; for photographic purposes and for silvering mirrors by instantaneous reduction of ammoniacal silver nitrate solution on the glass surface.

Dihydrazine sulphate is a toxic and corrosive substance and must be handled with care. Any salt which comes in contact with the skin should be immediately washed off and if irritation is caused, the affected part must be treated as for acid burn. Exposure to fumes is dangerous.

CHEMICAL ENGINEERING AT BIRMINGHAM

(*continued from previous page*)

fire fighting, and agricultural duties, SIGMUND PUMPS, LTD., has as its main feature a representative vertical glandless acid pump. This is designed to deal with acids in heavy concentrations and is being shown for the first time. A feature is that the liquid does not come into contact with the stuffing box, a by-pass branch being fitted immediately above the bearing to prevent the liquid rising in the column. Bearings are lubricated by the liquid handled by the unit, all parts subject to attack by the acid being composed of, or protected by, acid-resistant material.—**Stand D337.**

* * *

BATTERIES designed for a large number of specialised fields, including power stations, telephone exchanges and other large-scale undertakings, emergency lighting, electric vehicles, ships, etc., are being shown on the stand of the TUDOR ACCUMULATOR CO., LTD.—**Stand C109.**

THE INDOOR stand of THOS. W. WARD, LTD., displays photographs of the group's operations, including factory planning and installation work, industrial dismantling, scrap handling, erection of structural steelwork, etc. A series of pictures shows famous fighting vessels being broken up for scrap. The outdoor stand displays sheet metal working machinery, woodworking machinery, pumps and compressors, and some of the "Polford" range of foundry plant.—**Stands D719 and 1360.**

* * *

FABRICATED flanged pipework for pressure purposes, panels for panel heating and a selection of mild steel spiral wound gilled tube are some of the exhibits of the WELLINGTON TUBE WORKS, LTD. Several of the company's Weldex heaters are exhibited, capacities varying from a small unit heater to a heavy duty plenum, including a gas-fired unit heater for space heating and a selection of convectors.—**Stand C300.**

IMPRESSIONS OF THE 29th B.I.F.

THE GROWING EMPLOYMENT OF PLASTICS

IN the plastics section at Earls Court there are 46 exhibitors, compared with 53 last year, 71 in 1948 and 80 in 1947. The area of the floor space this year is 12,481 sq. ft., against 20,297 in 1949, 25,151 in 1948, and 21,400 in 1947. One of the stands (R2 and 33) is sponsored by the BRITISH PLASTICS FEDERATION, which has staged a composite exhibit of the products of its 16 constituent members. The exhibits in this section range through the whole field of plastics raw materials to a multiplicity of finished articles.

A reporter of THE CHEMICAL AGE obtained from a number of representative stands a cross-section of opinion on the position of plastics raw materials and the trade generally. On one stand it was stated that supplies of most raw materials are fairly satisfactory. Demands for nearly all moulding powders are being met quite comfortably, and the same applies to synthetic resns.

A particular shortage is in PVC, said this exhibitor, principally on account of the growing number of uses, and the large quantities being employed for the manufacture of certain articles, for example ladies' mackintoshes. In this connection it is interesting to note that plastic mackintoshes can now be bought for 15s. Electric cables still form the chief outlet for PVC, but very large quantities are also used in the motor car industry. Most of the cars now being exported are upholstered in leather cloth made from PVC.

Widened Need of PVC

The fairly satisfactory supply position of most moulding powders, synthetic resins, and other plastics raw materials was confirmed by several more exhibitors, who spoke, however, of the scarcity of PVC in relation to the demand for an ever increasing field of uses, illustrated by numerous articles displayed on their stands. Among its trade uses so illustrated are rigid PVC tubing for chemical plant, PVC sink traps for chemical laboratories, sections of cable sheathing, rigid PVC sheet for linings.

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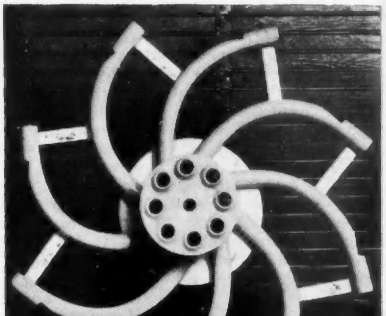
ON the stand of BRITISH CELANESE, LTD., is displayed representative articles fabricated from Celanese plastics, including Celastoid sheeting, extrusions in the form of rods, tubes and other engineering sections, and moulding powders; Clarifoil film for "vision packaging"; and Cinemoid special non-flam sheeting for lighting effects, etc. A range of Celanese fabrics is also shown. Coinciding with the BIF and continuing until June 16, British Celanese, Ltd., is holding an exhibition of its plastics and some of their applications, from Monday to Friday each week from 10 to 5 p.m., at Celanese House, Hanover Square, London, W.1.—**Stand R12.**



(Courtesy of I.C.I., Ltd.

The latest use of plastics in industry, a metering wheel in Alkathene (Rediweld, Ltd.) with high resistance to the hydrofluoric acid it measures and controls

* * *

A FULL range of cellulose acetate plastics, in the form of moulding powders, extruded sections, and films (marketed separately by British Cellophane, Ltd.) is made by COURTAULDS, LTD., and exhibited on its stand. The moulding powders are shown in a wide range of colours, from crystal to black with numerous translucents. Powders are produced in a range of hardnesses to suit customers' requirements, and are graded according to their flow temperatures. Courtaulds powders are stated to be made from virgin flake, which is blended for consistency and specially stabilised to prevent burning at the moulding temperatures. Dyes and pigments are tested for heat break-down and fastness to light and migration. On this stand is an attractive red ribbed floor covering in a Courtauld plastic material. Early delivery can be given of all

Courtaulds plastics products. Most powder can be supplied immediately and in most shades.—**Stand R10.**

* * *

AMONG the firms exhibiting on the combined stand of the British Plastics Federation in the Earls Court section are THOMAS DE LA RUE & CO., LTD., (Plastics Division) and DE LA RUE EXTRUSIONS, LTD., showing samples of Formica for use as a decorative surface, and models of building interiors where this material has been used for renovations. Uses of extruded materials are demonstrated by a number of finished articles. The De La Rue stand at Birmingham is entirely devoted to the industrial uses of plastics. Among these Delaron and Traffolyte engraving and interlaminate printed materials are shown, and a number of examples of their uses in constructional and electrical work.—**Stand R2 and R33, Earls Court, and D612, Birmingham.**

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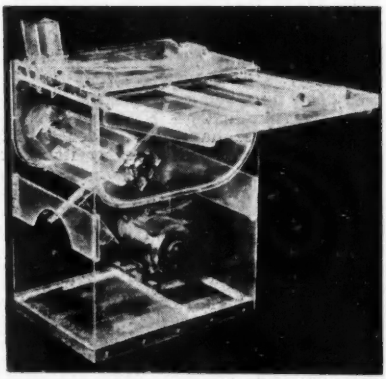
THE exhibit of I.C.I., LTD., is planned with the outside of the stand forming an index to the plastics materials made by the company shown in the form in which it sells them—powder, sheet, etc. Inside the stand are displayed representative examples of finished articles made from these materials. Here one is reminded, for example, of the use of Perspex sheet for fluorescent light fittings in industrial and domestic locations, and for street lighting.



[Courtesy of I.C.I., Ltd.

A successful further use of Perspex is the new type of photo-engraving etcher (D. O. Nicol, Ltd.), highly resistant and relatively easily produced because of the machinability of the material

Also shown here, made in Perspex, are globes and refractor plates for sodium lighting installations, motor-car dashboards, shatter-proof side windows, radio set dials and cabinets, implosion guards for television receivers, sewing machine tops, and numerous advertising signs and fancy goods. Samples of corrugated Perspex are shown, and in this product one is reminded that I.C.I. is well ahead of American manufacturers. Industrial inspection lenses in Transpex are also in this comprehensive display.

On the I.C.I. stand are many examples of the uses in the chemical trades and pharmacy of plastics. A novel example is a squeezable bottle in polythene. Alkathene film is attracting attention as a packaging material. Many other examples of plastics uses are on this stand, including brushes tufted in nylon, tennis rackets stringed with nylon, and numerous laminated applications.—**Stands R11 and R33.**

* * *

A FULL range of improved patterns of BSS ground glass joints, first introduced last year, is being exhibited by JAMES A. JOBLING & CO., LTD., among its standard laboratory and scientific glassware. Also included in the exhibit are representative examples of the firm's Pyrex brand industrial and lighting glassware.—**Stands S17 and S24, Earls Court.**

* * *

AN interesting example of the many established uses of plastics is to be found on the stand of HORN FLOWA, LTD. Here are buttons which are stated to withstand heat and chemical cleaning and do not bend or go soft in hot climates. It is also claimed that they can be stored indefinitely without fear of damage from rats and other vermin.—**Stand R26.**

* * *

AMONG the stands exhibiting plastics finished articles is that of the TRIPLEX SAFETY GLASS CO., LTD., a fabricator in Perspex. Displayed are numerous examples of lighting and domestic fittings, such as wash basins, for locations such as caravans, where lightness is an essential.—**Stand R20.**

* * *

TACKINESSS and cracking are claimed to have been overcome in the new flexible plastics, Fortiflex, based on vinyl resins, which are being shown by DUNLOP SPECIAL PRODUCTS, LTD. Many types of plastic sheeting and extrusions with a wide range of applications are manufactured by the company.—**Stand R16, Earls Court.**

Progress of German Apparatus and Instruments

Scope of the First Post-War Exhibition

THE German exhibition of scientific and industrial instruments and apparatus, the ACHEMA, was before the war a leading event in the industrial life of Germany. It appealed not only to chemists and engineers, but to practically all sections of industry and agriculture. The exhibitions were held about once every four years, and had made remarkable progress in size and importance, ACHEMA VIII in 1937 having 410 exhibitors and 103,000 visitors. This year's exhibition in Frankfurt (July 9-16), the first for 13 years, promises to equal that of 1937 in the number of exhibitors, and the attendance may well be larger.

The promoters are mainly the DECHEMA—Deutsche Ges. für Chemisches Apparatewesen — with which are collaborating this year the German engineering and iron and steel societies, the VDI and the VDEh.

Fruitful Research

It is expected that the exhibition will provide a revealing indication of the relatively rapid recovery in most fields of the German chemical and allied industries and represent the fruits of much research and invention. A preliminary survey shows that there will be much that is new and of technical value and scientific interest. Of the great halls in the Frankfurt exhibition buildings, Nos. VII and VIII—the two largest—will doubtless attract special attention. In the former will be housed complete plants for oil and fat refining, milk and fruit processing, metal working, manufacture of cement, sulphuric and nitric acids, fertilisers, nitrogen fixation, petroleum- and coal-chemicals, synthetic resins, and chemical specialities, such as salicylic acid, Salvarsan, formaldehyde, formic acid, etc. Important developments are said to have been made in separator plant, in the design of centrifugals and extractors.

Large-Scale Separation

These separators, evolved from the old type centrifugals and used for clarifying, purifying and the like, have double- and multi-chamber drums. In the latest type shown, occupying small space, the drum capacity is 70 litres and they are said to treat 4500 litres per hour in three-stage extraction. This is secured by establishing extraction equilibrium between solvent and crude material to be treated within a fraction of a second, since the separated liquids in one (centrifuging) stage are again mixed before the next stage.

Stainless steel is used for parts exposed to corrosive action, protective atmosphere for the interior. There is complete removal and recovery of the extraction medium, and the improved safety drive is said to eliminate the risk of explosion.

Important improvements are said to have been made in high vacuum technique, which is being increasingly used for distillation, drying, impregnating, in vacuum metallurgy—a very promising new field—and in other chemical and allied processes. New materials and new designs have had to be used in components: pumps, valves, joints, as well as in the new means of measurement and control.

Ultrasonics

Improved ultrasonic apparatus is to be shown for preparation of emulsions and suspensions, and for atomising liquids. For thermoplastic work containers up to 2 m. diameter are being used, heated by induction, the coils being inserted direct in circuit so that some 95 per cent of the current is converted into heat for the container jacketing. This ensures shorter heating time, better production, and more efficient temperature control.

A series of lectures will be given at the exhibition by authorities in their respective fields, and these, too, will describe many new lines and developments likely to be of scientific and practical value. Some details of these have been given in the ACHEMA Year Book, recently issued in connection with the exhibition. Among the subjects to be dealt with are: a new method for calculating (designing) clarifiers and filters; microfilm technique in the chemical industries; high vacuum processes; a new flame photometer; optical instruments; glass apparatus; new apparatus for high frequency work; new method and apparatus for determining carbon oxides, methane and hydrogen sulphide; improved filter-paper; developments in X-ray tests; improved forms of thermal control.

In the series of lectures on works practice and chemical engineering generally there appear to have been a number of innovations in the scope of liquid extraction, drying, filtration and emulsification.

DRUGS AND FINE CHEMICALS IN 1949—VI

Sources of Vitamin B_{12}

By G. COLMAN GREEN, B.Sc., F.R.I.C., A.M.I.Chem.E.

TURNING first to established fermentation processes, the Merck group found the factor was produced by *Streptomyces griseus* and was present in the fermentation liquor. This organism is used in the large-scale production of the antibiotic, streptomycin (Rickes *et al.*, *Science*, 1948, *108*, 634).

During recent weeks Glaxo Laboratories have offered Vitamin B_{12} from microbiological sources in the U.K. The preparation is marketed under the brand name Cytamen and one cc is equivalent to 20 micrograms Vitamin B_{12}, microbiologically standardised. A preparation from such a source is particularly valuable for administration to patients who have become sensitised to liver extract, a not infrequent occurrence.

It is highly probable that the Vitamin B_{12} from liver and *Streptomyces griseus* are identical (Dunlop, *Lancet*, 1949, *1*, 954). There appears to be another form of Vitamin B_{12} present in liver, which is obtainable from *Streptomyces aureofaciens*, the mould-like organism which produces the antibiotic aureomycin. This form differs from Vitamin B_{12} in its absorption spectrum (Pierce *et al.*, *J. Amer. Chem. Soc.*, 1949, *71*, 1514; 2952) as determined in the Lederle laboratories and this factor has been designated Vitamin B_{12b}.

Other hæmatopoietic factors in liver other than B_{12} and B_{12b} may well exist. Indeed, Lester Smith and his colleagues believe it probable that there are such additional factors (Lester Smith *et al.*, *Nature*, 1949, *161*, 638; *Biochem. J.*, 1949, *44*, v; *Brit. Med. J.*, 17/12/49, 1369).

Chemical Modifications

It is not known, however, whether or not these substances incorporate B_{12} in the molecule much in the same way as folic acid forms active conjugates with glutamyl residues (see earlier annual reviews), or whether they are chemical modifications of B_{12} such as occur in the penicillin series.

Vitamin B_{12a} is an active hæmatopoietic agent (that is one affecting the production of blood cells by the marrow), but less so than B_{12}; B_{12a} is produced artificially from B_{12} by catalytic hydrogenation (Kaczka, *J. Amer. Chem. Soc.*, 1949, *71*, 1514).

Intensive studies are proceeding on the chemical structure of Vitamin B_{12} and it has already been established simultaneously in the U.S.A. and the U.K. that the molecule contains cobalt. This metal has not been found previously in pure substances of biological origin.

The formula for Vitamin B_{12} has been tentatively suggested by Brink *et al* (*J. Amer. Chem. Soc.*, 1949, *71*, 1854) as :—

$$C_{61-64}H_{86-92}N_{14}O_{12}P\,Co$$

In common with the vitamin, riboflavin (a member of the Vitamin B complex), Vitamin B_{12} contains the 5 :6-dimethylbenzimidazole nucleus (Holiday, *J. Pharm. Pharmacol.*, 1949, *1*, 734; 957) which is released by drastic acid hydrolysis. Folkers came to a similar conclusion independently as announced at the First International Congress of Biochemistry at Cambridge in August, 1949.

Polyacidic Base

Vitamin B_{12} has also been shown to be a polyacidic base (*J. Amer. Chem. Soc.*, 1949, *71*, 1951), the basic groups being weak, and it has been suggested that it may not be a polypeptide but may contain a pyrrole or porphyrin structure.

The molecule is readily inactivated by treatment with cold acid or alkali, from which it may be deduced it possesses a readily hydrolysable group or linkage which is essential to its biological activity. Long heating with acid liberates a substance giving the ninhydrin reaction (ninhydrin or triketohydrindone hydrate is a specific reagent for α-amino acids) but the greater part of the molecule still containing the cobalt remains intact.

Drastic treatment with alkali releases pyrole-like substances and it is interesting to note that chlorophyll behaves in a similar way under such treatment.

Ellis *et al* (*J. Pharm. Pharmacol.*, 1949, *1*, 950) have indicated that the ninhydrin-reacting substance thus produced from Vitamin B_{12} chromatograms in a similar manner to 2-aminopropanol; it is not to be concluded, however, that there is an identity as a consequence.

In the light of present knowledge it has been suggested (*Pharm. J.*, 10/9/49, 194) that the formula for Vitamin B_{12} may provisionally be considered to be :—

$$(CH3)_2.C_5H_3.N:CH\,NH.C_{59-64}.H_{77-81}.N_{12}.O_2.P.Co.$$

The fact that Vitamin B_{12} contains the 5:6-dimethyl-benzimidazole nucleus is of great biogenetic interest (Beaven *et al. J. Pharm. Pharmacol.*, 1949, *1*, 957). Riboflavin which contains the 4:5-dimethyl-o-phenylenediamine nucleus is known to be synthesised by microbial flora in the rumen of sheep and this flora utilised at least a part of the cobalt ingested by the ruminant.

Cobalt Deficiency

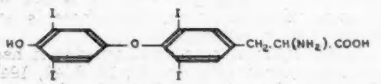
Wasting diseases in animals which result from grazing cobalt-deficient pastures are due, it has been suggested, not to the animal requiring cobalt as such, but to the animal requiring bacterial anabolic substances containing cobalt. At the same time, it has been found that Vitamin B_{12} administration causes no favourable response in cobalt-deficient lambs, which otherwise respond readily when cobalt itself is fed orally.

On the basis of these findings, Vitamin B_{12} would appear to play no part in cobalt deficiency in lambs; but the authors find it difficult to avoid drawing the conclusion that cobalt plays a part in Vitamin B_{12} synthesis. They consider that interesting experimental work is bound now to develop in this field.

An observation which is puzzling in the same degree is that of Bethell *et al.* (*J. Clin. Med.*, 1948, *33*, 1477) who found that fæces of untreated pernicious anæmia patients contain Vitamin B_{12} or some other factor which stimulates growth of *Lactobacillus lactis* in the same way. The factor was present in the fæces in an amount greater than would have been required to cure pernicious anæmia in the patient.

The functions of folic acid and Vitamin B_{12} in anæmia were also discussed in a symposium at the British Association meeting at Newcastle in 1949 (*Nature*, 1949, *164*, 986). There can be little doubt that 1950 will provide further knowledge of the character and use of Vitamin B_{12}.

Another interesting development during 1949 has been the rational and economic synthesis of the active isomer, l-thyroxine (Beta - [3:5-di-iodo-4(3′:5′-di-iodo-4′-hydroxyphenoxy) - phenyl] - alphaamino-propionic acid).



The lævo-isomer of this iodinated amino-acid is about twice as active as the racemic mixture.

Thyroxine may be obtained from the thyroid gland or by synthetic means. The main function of the thyroid gland is, of course, to regulate the body's metabolic rate and its growth and development. Thyroxine, itself, is the actual hormone although it is conjugated in the gland with a globulin, in which form, as well as in the form of a peptide, it also exists in extracts.

The structure of thyroxine was elucidated by Harington in 1926 (*Biochem. J.*, 1926, *20*, 293; 300) and the substance was synthesised by him and Barger in 1927 (*Biochem. J.*, 1927, *21*, 169). Synthetic routes have, hitherto, been too costly to provide a supply of the hormone and resort has been made to thyroid extracts which are the subject of a B.P. monograph (1948, p.562).

These extracts have been widely used in control of dysfunction of the thyroid gland, as, for example, in myxedema. This is a form of hyperthyroidism characterised by smallness of the gland, swelling of face and hands, slowing of pulse rate and general retardation of the rate of basal metabolism. There are other miscellaneous uses of the glandular extracts.

It has never proved easy to standardise these gland extracts, so that the availability of the pure hormone at an economic price is of outstanding convenience.

The recent synthesis has been achieved by Hems and his co-workers and has been reported in a classical paper in the *Journal of the Chemical Society*, 1949, 3424. This work has also been summarised by Hems and Eks (*Pharm. J.*, 31/12/49). It was also the subject of a paper by Hems read before the Fine Chemicals Group of the Society of Chemical Industry in London, in December, last year.

Synthesis Problems

The two principal difficulties in synthesis were associated with the formation of the di-iododiphenylether grouping and the inconvenient synthesis of the alanine side chain from a nitro group.

In Harington's synthesis, 3:4:5-tri-iodo-nitrobenzene was first condensed with p-methoxyphenol and then, through a series of some five or so stages, the nitro group in the former compound was converted to the alanine side-chain and the molecule otherwise appropriately modified by iodination and demethylation.

Hems' approach has been made from a derivative of tyrosine, already containing the alanine side-chain in the molecule.

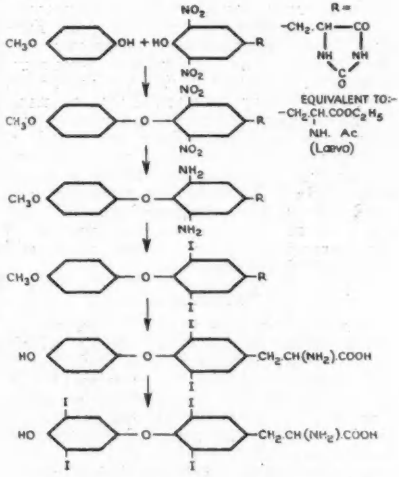
The first step in Hems' synthesis was the elaboration of a general method of

preparing diphenylethers from dinitrophenols.

The second major step was the use of 3:5-dinitrotyrosine. This, despite statements to the contrary in the literature, was found to yield di-iodo compounds from the diaminodiphenyl ether prepared from it, so long as the reaction was carried out in anhydrous conditions.

Successful synthesis of dl-thyroxine was achieved from dinitro-dl-tyrosine hydantoin and subsequently it was found that the naturally occurring thyroxine isomer could be synthesised by using 3:5-dinitro-N-acetyl-l-tyrosine ethyl ester.

Various steps in the synthesis carried out in the Glaxo Laboratories (which is the subject of a pending patent) were as follows:—



Steady progress continues in the antibiotics field and 1949 has proved a period of consolidation and extension of knowledge of established discoveries in the field.

Penicillin and streptomycin continue to carry the main interest while knowledge of the latter, especially in the treatment of certain types of tuberculosis, continues to expand.

Streptomycin, by contrast with penicillin, was essentially a U.S. discovery and manufacture in this country has somewhat lagged.

Manufacture was, however, begun in mid-1948 by Glaxo Laboratories, which has since developed its process. All production up to November, 1949, was sent to hospitals designated by the Ministry of Health. Since that date streptomycin has been freed for use in general practice.

Streptomycin, including related substances such as dihydrostreptomycin, remain subject to the provisions of the Penicillin Act of 1947 by virtue of the Streptomycin Regulations of 1948 (S.I., 1948, No. 1735) and it is, therefore, available on prescription only.

No substantial demand has developed in general practice since the conditions in which streptomycin is more particularly indicated require hospitalisation, partly because of the character of the infections, but also because of the need for repeated administration and the risk of inducing streptomycin resistance by improper treatment.

It has been generally assessed as a generally more harmful and less potent therapeutic agent (*Brit. Med. J.*, 12/11/49, 1098) requiring commensurate caution in its use.

So far as manufacture of streptomycin is concerned the fermentation section broadly follows procedures established in penicillin production. *Streptomyces griseus*, however, requires its nitrogen supply in the form of meat extract, as compared with the relatively cheap and more accessible corn steep liquor required by *Penicillium*.

Adsorption Process

The extraction section of the process, however, differs from the corresponding stage in penicillin manufacture in that the latter is isolated essentially by a series of solvent extraction operations (see earlier annual reviews) whereas streptomycin production involves a series of adsorption procedures. The antibiotic is first isolated as its hydrochloride, which is then converted to its calcium chloride salt.

The most important field of application of streptomycin is in the treatment of certain types of tuberculosis, especially the miliary form of the disease.

Effective use in pulmonary tuberculosis, however, calls for a nice judgment, as there is a stage in the progress of the disease when it can be used with optimum effect. It must then be used efficiently, as otherwise there is a risk of developing streptomycin-resistance with enhanced danger to both patients and contacts.

Indeed, as pointed out in earlier annual reviews, it has been demonstrated that the fantastic transformation can occur of streptomycin, the growth inhibitor becoming an essential growth factor for the same organism.

Hope exists that the mainly neurotoxic

side-effects so characteristic of streptomycin therapy may be minimised or obviated by the use of dihydrostreptomycin, which is now being manufactured in this country and offered in the form of the sulphate.

Supplies of this derivative, however, are so small that, up to the end of 1949, at least, they were restricted to hospitals. Unfortunately, resistance appears to develop equally readily with dihydrostreptomycin as with the parent antibiotic and resistance to the one means resistance to the other.

No Maltol Yield

Dihydrostreptomycin is produced by the catalytic hydrogenation of crystalline streptomycin. It is said to be chemically and pharmacologically distinct from streptomycin (the Merck Report, —/1/49, 25). It is not inactivated by cysteine or carbonyl reagents and does not yield maltol by the action of alkali. Allergic manifestations are much less likely with dihydrostreptomycin than with the parent substance.

Conn & Norman (*J. Clin. Invest.*, 1949, *28*, (5), 837) describe an amperometric method for the estimation of streptomycin and dihydrostreptomycin depending upon their ability to form water-insoluble salts with various antonic dyes.

A method for the determination of dihydrostreptomycin based upon the formaldehyde liberated by periodate oxidation of dihydrostreptomycin is described by Garlock and Grove (*J. Clin. Invest.*, 1949, *28* (5) 843).

Periodate oxidation is a general method for clearing the linkage between two adjacent hydroxyl bearing carbon atoms and if one of the hydroxyl groups is a primary carbinol, formaldehyde is produced. The formaldehyde released was titrated with chromotropic acid after distillation.

Following earlier research, the Medical Research Council has undertaken clinical trials of p-aminosalicylic and streptomycin. These trials were commenced in 1948 and a preliminary report was issued last year (*Brit. Med. J.*, 31/12/49, 1521).

The tuberculostatic properties of p-aminosalicylic acid were first reported by Lehmann in Sweden in 1944. It is interesting to observe that so simple a synthetic substance, in contrast with many more complex ones which have been tried, should be found to be so effective in this intractable disease.

Especially is this notable when it is remembered that this same drug has growth promoting effects with some micro-organisms.

Broad results of the trials with p-aminosalicylic acid have been so encouraging that it has been found worthwhile publishing a reserved preliminary report, even though the tests are not completed. The object was to assess the clinical effect of both p-aminosalicylic acid (PAS) by itself and in combination with streptomycin in the treatment of tuberculosis.

Investigations have been carefully controlled and restricted to specially diagnosed cases of pulmonary tuberculosis of recent development which were unsuitable for collapse therapy.

The reason for trying the combination of streptomycin with PAS was to confirm earlier reports that the combination was advantageous in that the addition of a second tuberculostatic agent might be sufficient to suppress any streptomycin-resisant organisms which might be present.

At the present juncture, the tests show that the combination suppresses the development of streptomycin-resistant strains of tubercule bacilli during the six months following the start of the treatment.

The terms of this preliminary report are admirably cautious and further details of the trials will be awaited with interest. Incidentally, there seems to be a synergistic effect between streptomycin and PAS which is independent of any question of averting the development of streptomycin-resistance, but this still awaits final confirmation.

"Promizole"

Combined therapy with other tuberculostatic drugs is naturally being widely explored by workers in this field; but it has been found that "promizole" (2-amino-5-sulphanilyl-thiazole) in combination with streptomycin did not reduce the incidence of the emergence of streptomycin resistance.

p-Aminosalicylic acid is being manufactured by Therapas, Ltd. (a company jointly operated by Herts Pharmaceuticals. Ltd., and British Chemicals and Biologicals, Ltd.) and it has been stated that the cost of treatment per patient per week with PAS would be reduced to 5s. with the large-scale manufacture now about to be undertaken (*Chem. & Dr.*, 7/1/50, 12). For further information on manufacture, readers are referred to B.P. 636, 333 and B.P. 636, 331. PAS is also manufactured by other firms.

Following the work of Domagk (e.g., *Amer. Rev. Tuberc.*, 1950, *61*, 8; *Naturwiss*, 1946, *10*, 315) p-acetylaminobenzaldehyde thiosemicarbazone is also now available in the U.K. for clinical trials in tuberculosis.

(To be concluded)

Technical Publications

TRAINING of a Chemist, the presidential address of T. S. Wheeler delivered in Dublin last year, is reproduced in the *Irish Chemical Association Journal*. Other papers included are the guest lecture on "Plant Viruses" delivered by Miss Phyllis E. M. Clinch and "The Biological Significance of Steroid Compounds" by Dr. W. J. E. Jessop.

* * *

AN undesirable custom of calling reactions, even those which are uncommon, by the name of the discoverer, has grown up in recent years. In an effort to overcome the obscurity thus caused, notes when reading literature were made by Prof. T. S. Wheeler (professor of chemistry, University College, Dublin) and revised by J. E. Gowan (1851 Exhibition Research Student). These have now been published as a booklet, "Name Index of Organic Reactions," by the Society of Chemical Industry (price 5s. net) in the hope that they may be useful to others. The aim is merely to give an idea of the nature of each reaction, and one or more references which will supply further information.

* * *

INCREASING application of the spectrograph in both academic and industrial research and in production control has brought about an increasing demand for standardised substances. Full details of the metals and compounds representing 68 elements and the forms in which they are available are given in "Standardised Substances for Spectrography, Chemical Analysis and Research," issued by Johnson, Matthey & Co., Ltd. The booklet, which is a revised edition of the company's publication No. 1760, is a complete reference for users of standardised substances.

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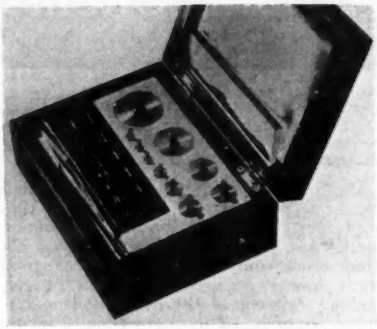
A CONCISE but comprehensive survey of the post-war record of the steel industry is given in "The Monthly Statistical Bulletin" for March, 1950, (Vol. 25, No. 3) now available from the British Iron and Steel Federation.

* * *

A TEAM of technicians and directors from 13 firms is being organised by the Engineering Centre, Glasgow, to represent Scottish industry at the forthcoming Canadian Trade Fair, Toronto. This and other items concerning the activity of the centre are given in its quarterly bulletin No. 8, (April, 1950) now available.



[Courtesy of L. Oertling, Ltd.

Nickel-chromium weights are claimed to be more durable than other metals; they are non-magnetic and corrosion resistant to both oxidising and sulphur fumes. These are fitted with screw-type knobs to permit adjustment. Each set is contained in a polished mahogany case lined with white velvet. Brass-tipped forceps are included

EXPLORING the Infinitesimal is the title of an article on the electron microscope, illustrated by photographs showing objects magnified 24,000 times, in the May issue of "The Shell Magazine." There is a full report of the launching by Princess Margaret of the S.T.S. *Velutina* at Wallsend-on-Tyne and an article on the development of the Shell tanker fleet.

* * *

APPLICATION of Inconel to diesel engine exhaust systems on lifeboats and its properties at elevated temperatures are described in the current issue of "Wiggin Nickel Alloys," published by Henry Wiggin & Co., Ltd. Birmingham. Other articles include Nickel in Water Meters, Monel Steam Accessories and Oil Filters, and A Corrosion-resistant Type of Thermometal.

* * *

MORE than 60 reports have recently been published by Research Information Service (509 Fifth Avenue, New York 17) on German research and manufacturing processes in the field of synthetic resins and resin intermediates. Research Bulletin No. 44, "Plastics," lists research data contributed by the Scientific Intermediates Commission of I. G. Farbenindustrie, patent applications, etc.

The Chemist's Bookshelf

PRACTICAL ORGANIC CHEMISTRY. J. J. Sudborough and T. Campbell James. 2nd Ed. London, 1949. Blackie, pp. 450. 15s.

The first edition of this well known book appeared in 1909 and it has since then been reprinted many times. The opportunity has now been taken to revise the whole work completely and to incorporate many new experiments designed to give practice in some of the more modern synthetic methods. The characteristic layout of the book has been preserved, thus keeping together all the reactions and preparations related to one type of functional group. A useful feature is a number of selected experiments to illustrate various types of organic reactions, such as reduction and oxidation. In addition, much useful information is included on the preparation of reagents. The analytical aspect of a course in practical organic chemistry is not overlooked, since there are directions for the characterisation of unknown compounds, ultimate analysis and a most useful selection of experiments illustrating the quantitative estimation of common types of compounds. The high standard of the previous edition is well maintained and the present volume will prove entirely suitable for any student undertaking a degree course in chemistry. —G.D.

ATOMIC ENERGY. Edited by J. L. Crammer and Prof. R. E. Peierls. Penguin Books, Ltd., West Drayton, Middlesex, 1950. 1s. 6d.

Changes representing the swing of interest from the atomic bomb to the peaceful and industrial applications of nuclear physics are described in this work, which was originally intended only to be a reissue of "Science News 2," long out of print. The opportunity has, however, been taken not only to revise the original material but to add four new articles and many fresh illustrations.

British and American experts have combined to contribute a comprehensive survey which can be appreciated by the layman as well as a useful introduction to anyone concerned in the application of atomic energy to industry, civil defence or public health.

The nine sections are devoted to the release of atomic energy and production of atomic fuel by isotope separation, by Prof. Peierls; atoms and nuclei, by H. A. Bethe; nuclear reactors, by Sir John Cockroft; raw materials for atomic power, by C. E. Tilley; physics of the bomb, by Philip Morrison; use of radioactive isotopes in biology and industry, by W. J. Arroll and K. Fearnside; a note on health hazards, by J. L. Crammer; and the tools of nuclear physics, by O. R. Frisch.

The 24 plates show part of the plants of four of the five countries now engaged in atomic energy development—none being available from the U.S.S.R. There are also some interesting notes about the contributors and a useful index.

ZUR KENNTNIS DER KONTAKT-INSEKTIZIDE. Dr. R. Riemschneider. 1949. Werner Saenger, Berlin. Pp. 150. Dm.10.

The author continues and summarises his work on contact insecticides begun in a special number of *Die Pharmazie* (THE CHEMICAL AGE 59, 132), starting with a survey of the technology and the chemical, physical and toxicological properties of the halogen-hydrocarbons. A concise review of international research and developments is presented, based on published material, and on reports by those who are actually testing their suitability as insecticides and for biological purposes. The bibliographical list of the publication covers 11 pages with 340 references, apart from those quoted in footnotes.

The text is divided into two, the first part dealing with the DDT- and DDD-groups, and the second with the HCH-group. Each section covers formulæ, properties and applications comprising 50 tables and illustrated by 20 figures.

The author's work and considerable experience enable him to give a critical and comprehensive survey of insecticides and make this book a short encyclopædia. Much tribute is paid to British literature, patents and products, and special attention given to gammexanes and the many varieties of the DDT-groups.

HOME

Oils and Fats

No change will be made in the prices of unrefined oils and fats and technical animal fats allocated to primary wholesalers and large trade users during the 4-week period ending June 3, 1950.

Antibiotics Price Reduced

The second price reduction of streptomycin, since it became available on prescription, is announced by Glaxo Laboratories, Ltd. The price of dihydrostreptomycin is reduced by the same amount.

Zinc Prices Raised Again

An immediate increase of £4 a ton in the price of good ordinary brand zinc was announced by the Ministry of Supply on May 9. The price was raised from £99 10s. to £103 10s. a ton delivered; other grades increased accordingly. Prices of zinc oxides in lots of not less than two tons delivered were increased by £3 10s. a ton.

Gas Engineers' New Quarters

The Institution of Gas Engineers has moved into new headquarters at 17, Grosvenor Crescent, London, S.W.1, which were opened yesterday by Mr. A. Robens, Parliamentary Secretary to the Ministry of Fuel and Power, in the absence of Mr. Noel-Baker. Mr. C. H. Chester, president of the institution, presided at the ceremony.

April's Record Steel Output

Steel production in April was at an annual rate of 16,822,000 tons, compared with 15,854,000 tons in April, 1949, both months being affected by the Easter holiday. This represents the highest rate of production ever achieved in that month, reports the British Iron and Steel Federation. Pig iron output was at the annual rate of 9,492,000 tons, compared with 9,288,000 tons a year ago.

Coal Distillation Proposal Revived

Miners in Scotland are again raising the proposal for the erection of a coal distillation industry in Lanarkshire and attempted at the Scottish Trades Union Congress, to obtain backing for their persistence. It is urged that some 9 million tons of coal could be worked if a distillation unit were created. The Scottish Council (Development and Industry) which recently decided that the project was not economic, has agreed to continue consideration of the matter. It is still considered unlikely that any scheme of distillation will be officially sponsored in Lanarkshire.

Pharmaceutical Examinations

Forty men and six women qualified as chemists and druggists at the April examinations of the Pharmaceutical Society. Forty-six men and 29 women passed the intermediate examination.

Coal Production Lower

Output of coal last week was 4,211,500 tons, compared with 4,396,000 tons the previous week. Production of deep-mined coal fell from 4,121,400 tons of the previous week to 3,927,000 tons, but opencast output increased from 274,600 tons to 284,500 tons.

Export Credits

The Export Credits Guarantee Department announces the removal, as from May 4, of its West London and Western district office from Mayfair Court, Stratton Street, W., to Victory House, 99/101 Regent Street, W.1. Tel: Regent 0682/3/4. Telegraph: Credexport Piccy.

New Dunlop Factory

A new factory to make latex foam cushioning is about to be opened by the Dunlop Rubber Company on the Hirwaun Trading Estate in South Wales. A group of buildings, acquired by arrangement with the Board of Trade, gives a floor area of more than 250,000 sq. ft. Plant will be installed immediately, and when the factory is in full production it will employ 900.

New Veterinary Streptomycin

Glaxo Laboratories, Ltd., Greenford, introduced last week a new streptomycin treatment for some forms of bovine mastitis which are resistant to penicillin. This, dihydrostreptomycin veterinary cerate, is regarded as complementary to penicillin and not as a replacement. It is likely to be most useful against organisms which are penicillin-resistant and penicillinase-producing; strains of *E. coli* and *Staph. aureus* are examples of such bacteria.

New Leather Research Laboratories

The Duchess of Kent has consented to perform the opening ceremony of the new laboratories of the British Leather Manufacturers' Research Association at Milton Park, Egham, Surrey, on May 22. On the afternoon of the following days (May 23 to 25) the laboratories will be open for inspection by members and their representatives. There will be an exhibition of the work of the Research Association, and a display of the wide variety of products of the industry. The director of research is Dr. Henry Phillips.

OVERSEAS

German Lead for U.S.A.

The intention of the U.S.A. to purchase with counterpart funds 5000 tons of premier grade lead from Germany was announced last week by the U.S. High Commissioner in Frankfurt.

Argentine Sulphur in Government Hands

The Direccion General de Fabricaciones Militares, Argentina, has been authorised to acquire the privately-owned shares in Industrias Quimicas Nacionales company, formed to manufacture sulphur and its by-products.

Industrial Development in Spain

The Ministry of Industry has announced particulars of its 1950-51 industrialisation plan aimed at the development of the mineral, steel and chemical industries. Plans include extensive prospecting for coal and metals, installation of rolling mills and increasing the output of chemical products and cement.

Increased German Coal By-Products

The increase in the output of coal in Western Germany from 87 million tons in 1948 to 103 million tons last year has brought a corresponding increase in the output of coal by-products. The 1949 figures for the most important of these (in thousand tons) are: Crude benzol, 239 (202 in 1948); crude tar, 839 (716); sulphate of ammonia, 278 (230).

Indian Fuel Research

Dr. Raejendra Prasad, President of India, opened the National Fuel Research Institute at Dingwadit, in the Jharia coal fields, Bihar, on April 22. It is hoped to produce 70,000 tons of aviation petrol a year, which would be amply sufficient for India's needs. Reserves of Indian coal have been estimated at 65,000 million tons, of which 22,000 million tons are now considered to be workable. Of that, good quality coal does not exceed 5000 million tons.

Dutch-U.S. Plastics Agreement

The Dutch Wire & Cable Co. ("Draka") has concluded a contract with the (U.S.) Dow Chemical Company by which the Dutch company receives a licence for the application of the primary material to produce the cellular resin, Saran. Increasing use is being made by the Dutch company of polyvinyl chloride and polyethylene for producing pipe and hose materials, etc.

Austrian Lithopone

Work at the new lithopone factory of the Bleiburger Mining Union is due to begin soon. The works will have a capacity of 4200 tons annually, twice that of the old installation.

Japanese Chemicals for Argentina

According to reports from Tokyo, Argentina has granted facilities to import Japanese goods to the value of U.S. $8.8 million, including chemicals valued at $500,000, and iron and steel worth $140,000. These facilities are in addition to import permits already issued, valued at U.S. $3 million.

U.S. Aluminium Production Improves

Output of primary aluminium in the U.S.A. in January showed a return to a more normal level. The total of 52,023 short tons was only 1333 short tons less than the same month of 1949, and a 26 per cent improvement over the December figures. Prices of primary pig and ingot remained unchanged.

New Belgian Oil Refinery

Work has now begun on the 30,000 barrel-a-day oil refinery being constructed at Antwerp by the Kellogg International Corporation (European subsidiary of the M. W. Kellogg Co., New Jersey, U.S.A.) for the Société Industrielle Belge de Pétroles. The refinery is near the Scheldt river. Completion of the refinery is scheduled for the middle of 1951.

U.S. Aluminium Plant for Austria

Four U.S. cold rolling units are being erected at the aluminium works in Ranshofen, Austria. They were purchased with ERP funds and a loan from the Export-Import Bank in Washington. The works plans to produce annually 10,000 metric tons of strips, pipes, bars, profiles, wires, etc. The number employed, now 100, is to be increased to 425.

Indian Standards for Heavy Chemicals

To meet the needs of the textile, paper and other industries in India, the chemical division of the Indian Standards Institution has drawn up draft standard specifications for the following heavy chemicals: sodium sulphate, technical; Glauber's salt, technical; Epsom salts, technical; potash alum, technical; ammonia alum, technical; aluminium sulphate, non-ferric; alumino ferric; alum cake; copper sulphate, technical; and iron sulphate, technical.

· PERSONAL ·

PROF. M. H. L. PRYCE, Wykeham Professor of Physics, Oxford University, who is consultant to the Atomic Energy Research Establishment, Harwell, has agreed to be responsible for the technical supervision of the theoretical physics division at Harwell for the time being. This position was formerly held by Emil Fuchs. Prof. Pryce, who is 37 years of age, is an expert on the industrial application of atomic energy.

SIR JOHN ANDERSON was to perform the opening ceremony, yesterday (May 12), at the new research station at Gomersal, near Leeds, of the Coal Tar Research Association.

Chemical Commodities, Ltd., formerly the Czechoslovak Chemical Works (London), Ltd., announces the resignation of the following directors: MR. DAVID FINNIE, DR. GEORGE LEWI and CAPT. C. F. WARD JONES.

JOSEPH HARRISON BRENNAN, chief metallurgist of the Union Carbide & Carbon Corporation, was the 20th recipient of the Jacob F. Schoelkopf Medal for 1950, bestowed annually by the American Chemical Society for outstanding chemical achievement. The award was "in recognition of his contributions to the metallurgical practices of the ferro-alloy industry, particularly with respect to the economical production of ferro-chromium of very low carbon content, and the development of processes for winning tungsten and other less common metals from their ores."

Edgar Allen & Co., Ltd., announces the appointment of MR. WILLIAM E. GOODRICH as an assistant to Dr. Edwin Gregory in the company's research laboratory. Mr. Goodrich is a Master of Metallurgy and Brunton Research Metallurgist of Sheffield University. From 1921-1925 he was senior metallurgical investigator for the British Non-Ferrous Metals Research Association. Before joining Edgar Allen & Co., Ltd., in December 1949, he was superintendent of metallurgical research and development for the Guest, Keen and Nettlefolds Group.

The election is announced of MR. GEORGE C. SHARP as a director of the International Nickel Co. of Canada, Ltd. He is a member of the law firm of Sullivan & Cromwell, the company's general counsel, and has been actively engaged on the company's legal affairs for more than 25 years. He fills the vacancy on the board of MR. JOHN FOSTER DULLES, who resigned following his recent appointment by President Truman as special adviser to Secretary of State, Dean Acheson. He is also a director of the company's U.S. subsidiary, The International Nickel Company, Inc.

Among the personalities to be honoured by the University of Liverpool with the conferment of honorary degrees in July is PROFESSOR HUGH STOTT TAYLOR,; Professor of Chemistry at the University of Princetown, New Jersey, U.S.A., who was born at St. Helens in 1890. Professor Taylor, now one of America's leading research directors. won the David Gamble scholarship at Liverpool University in 1906 and in 1909 he gained his B.Sc., first-class (honours chemistry) and the Sheridan Muspratt Scholarship for post-graduate work.

The following passes in the final examination for degree of B.Sc. in applied chemistry at Glasgow University have been announced:—

Dyestuffs and their applications—FARQUHARSON, E.N.; HAIR, G. H.; JAMIESON, I. M.; JOHNSTON, J. M.; M'LINTOCK, G. K.; M'NAUGHTON, D.; MARTIN, P.; PAJACZKOWSKI, A.; ROSE, T. J.; SNEDDON, J. G.; TAYLOR, D. B.

Fuels (Advanced)—BENNETT, R. N.; DEANS, A. A.; HALL, F.; HARRIS, J. G. H.; HOY, G.; ROBERTSON, S.; ROXBURGH, D.; SNEDDON, L. M.; TAYLOR, A. W.; WARD, R. M.

In appreciation of his 30 years' service as chemist to John W. Leitch & Co., Ltd., aniline dye manufacturers, Huddersfield, MR. HAROLD GREAVES was presented with an oak grandmother clock by the managing director, Dr. A. E. Everest.

THE 47th festival dinner of the Readers' Pensions Committee will be held at the Connaught Rooms, London, on May 13 at 7 p.m. Mr. E. Glanvill Benn, who has been appointed chairman of the committee for 1950 and will preside at the dinner, recalls that its work began 62 years ago on the principle of self-help. He emphasises the reliance of publishers—and of all who read books, newspapers, periodicals, etc.—on the accuracy of the printer's reader and asks for the public's generous support.

Donations to the fund should be addressed to the hon. secretaries, 1 Gough Square, E.C.4.

THE COSTLY NINEPENCE

Effects of Rising Transport Costs

THE Government has struck a spiteful blow at the whole economic existence of Britain, observed the British Road Federation in a recent comment on the Budget proposals. The tax on motor fuel and the 33⅓ per cent purchase tax on commercial vehicles, said the Federation, are aimed at penalising indispensable road transport. Ninepence a gallon—an increase of 33⅓ per cent on present prices—will damage every family budget in the country. From now on the price of all classes of goods will start rising, while bus and coach fares will follow suit. Lower income classes will be among the worst affected. Not a single factory worker, not one housewife can hope to escape. Every lorry load of export goods will cost more at a time when buyers' markets are already creating desperate international competition.

Mr. F. D. Fitz-Gerald, national secretary of the Traders' Road Transport Association, national organisation for "C" licence-holders, said the new imposts appeared to be an effort to force the transfer of traffic from roads to rail. That this transfer would automatically take place was not a sound assumption. Traders and industrialists, when determining the most suitable form of transport, by no means based their decision solely on relative freight charges. There were other and equally important factors, such as speed of delivery and reduction of handling and packing costs.

FERTILISER PRICES RAISED

First Result of New Rail Rates

THE Board of Trade has made an order, effective on May 15, which provides increased maximum prices for all fertilisers in Great Britain other than muriate and sulphate of potash, but including compound fertilisers.

The increase in price will be 2s. 6d. per ton for superphosphates, ground phosphates and compound fertilisers; 3s. per ton for basic slag; and 4s. per ton for sulphate of ammonia. These increases are to cover higher delivery costs due to the increase in rail freights.

"The London Boy"

MORE than two hundred guests are expected at the annual dinner of The John Benn Boys' Hostels Association at the Connaught Rooms on May 17, at which Lord Derby will preside. The toast of "The London Boy" will be proposed, as in former years, by a public school headmaster, on this occasion by Mr. George Turner, C.M.G., Headmaster of Charterhouse. Other speakers, besides Lord Derby, will include Lord Justice Denning, Lord Webb-Johnson and Sir Ernest Benn. Tickets for the dinner are still obtainable from the Appeal Secretary, Miss Lury Bouverie House, Fleet Street, E.C.4.

OBITUARY

THE death was reported last week of DR. GILBERT WOODING ROBINSON, professor of agricultural chemistry and adviser in the school of agriculture in the University College of North Wales at Bangor. The doctor was widely known as an authority on the properties of soils and had particularly close associations with Spain, from which country he had, in fact, returned only a fortnight before his death. Early this year he had welcomed a number of Spanish scientists at Bangor and in 1946 he delivered a series of lectures at Madrid University. In 1949 Dr. Robinson went to New Zealand as delegate of the Royal Society at the Pacific Science Congress. He had travelled widely and was an excellent linguist. When he presided at an international conference of soil experts at Bangor before the war he used six languages.

DR. HUGO ALEXANDER DICKIE, one of the leading metallurgists in Great Britain, died in a Northampton hospital last week. The doctor, who was 54, was general manager of research and technical development at Stewart and Lloyds, Corby. He served on a number of committees of the British Iron and Steel Federation, and was a member of the British Iron and Steel Research Association.

The death occurred recently of MR. GAVIN LAWSON, chief chemist and a director of Cumming, Parson, Ltd., essence distillers, Manchester. Mr. Lawson, who was 40, went to the company's head office in Manchester in 1936. He took an active part in building up a wide range of flavourings.

The Stock and Chemical Markets

STOCK markets have been uncertain in the absence of improved demand. Even British Funds eased earlier in the week, despite over-subscription of the £150 million British Electricity issue. Higher rail freights and the increased petrol tax caused uncertainty in industrial shares; these further rises in costs mean that it will be increasingly difficult to maintain profits or prices.

Imperial Chemical failed to hold an earlier improvement, easing again to 42s., pending publication of the full results and the chairman's annual statement. They are awaited with particular interest in the City. Monsanto were 47s., Albright & Wilson 28s. 3d., Brotherton 10s. shares 19s. 3d., Boake Roberts 26s., Laporte Chemicals 5s. shares 9s. 6d. and Amber Chemical 2s. shares 4s. 9d. In other directions, F. W. Berk 2s. 6d. shares were 14s. 3d., Bowman Chemical 4s. shares 5s. 3d. and L. B. Holliday 4½ per cent preference 19s. 9d. Fisons were 22s. 6d. and Turner & Newall rose further to 80s. 7½d.

In the plastics and kindred sections, British Xylonite rose further to 73s. 9d., De La Rue were 20s., British Industrial Plastics 2s. shares 5s. 4½d., and Kleemann 1s. shares 7s. 4½d. ; The 4s. units of the Distillers Co. firmed up to 17s. 7½d. and Associated Cement remained active around 80s. 6d.

Paint shares strengthened again, notably Goodlass Wall to 34s. 3d. and Pinchin Johnson were 40s. British Oxygen were dull at 88s. 1½d., prior to the annual meeting, and British Glues & Chemicals eased to 19s. 9d. Borax Consolidated, however, remained steady at 51s. 6d. Dunlop Rubber changed hands around 62s., prior to the dividend announcement, and in other directions, Lever & Unilever have been steadier at 40s. 4½d.

Iron and steels strengthened as a result of the good impression created by financial results issued recently. Guest Keen were 44s. 6d. on the Jubilee bonus, Stewarts & Lloyds remained under the influence of the increased profits, and the yield of 6¼ per cent drew attention to United Steel at 25s. 6d. Dorman Long were 30s. 3d. and Staveley changed hands around 78s. 6d.

Babcock & Wilcox, however, eased to 60s. after the chairman's warning on the weight of taxation and growing competition. Newton Chambers rose to 75s. 6d. at Sheffield on further consideration of the past year's figures, which showed the unchanged 15 per cent dividend to be substantially below earnings on the shares. The market expects that when compensation for colliery interests is eventually received there will be a special return of some kind for shareholders.

Boots Drug have been steady at 46s. 9d., reflecting general confidence that the 40 per cent dividend on these 5s. shares is likely to be maintained despite the increased capital. Sangers were 21s. 6d. and Beechams deferred 12s. 6d. Glaxo Laboratories 10s. shares have been active around 46s. 6d.; British Drug 5s. shares were 6s. 6d. and Evans Medical 6s. 4½d.

Market Reports

GOOD delivery specifications for heavy chemicals have been reported and an active demand is in evidence from most of the large consuming industries. Prices are for the most part unchanged, although the undertone is distinctly firmer, due to the expectation of higher transport costs. The convention rates for red and white lead have again been advanced as a result of the higher price for the metal, the new basis price for dry white lead being £118 5s. per ton and for dry red lead £108 15s. per ton. The overall improvement in the supply position continues to be maintained and there is now little difficulty in meeting most of the demands from overseas markets, which, however, are becoming increasingly competitive. The feature in the coal tar products market continues to be the advance in prices due to the petrol tax. The market has enjoyed a more active demand than for some time.

MANCHESTER.—Reasonably brisk trading conditions have been reported during the week in most sections of the Manchester chemical market. The textile and other principal using industries continue to take good deliveries against contracts. Replacement buying of the soda, ammonia and magnesia compounds, as well as in a good many other lines, has been fairly substantial in the aggregate. A steady movement of supplies on export account has also been reported. Prices are generally firm, with further advances recorded for the lead and zinc compounds.

GLASGOW.—There has been little change in the Scottish chemical market this week, apart from some heavy buying in an endeavour to build up stocks before the increase in freight rates. Considerable uncertainty exists about future prices. Demand for coal tar products has been well maintained.

Law and Company News

Commercial Intelligence

The following are taken from the printed reports, but we cannot be responsible for errors that may occur.

Mortgages and Charges

(Note.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described herein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every company shall, in making its Annual Summary, specify the total amount of debt due from the company in respect of all Mortgages or Charges. The following Mortgages or Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.)

HYDROL CEMENT WATERPROOFERS, LTD. (formerly MINERS CEMENT WATERPROOFERS, LTD.), London, S.W. (M., 13/5/50.) April 12, £2500 and £1500 mortgages, respectively to Moller Investment Trust, Ltd., and British United Investment Corporation, Ltd.; both charged on 147 Bollo Bridge Road, Acton. *Nil. January 13, 1947.

INDUSTRIAL CHEMICALS, LTD., London, W.C. (M., 13/5/50.) April 11, series of £5000 debentures, present issue £1500; general charge. *Nil. July 22, 1949.

F. H. STEELE & CO., LTD., Dublin, manufacturing chemists. (M., 13/5/50.) April 4, mortgage for securing £1800 and any other moneys that may become due to the Irish Civil Service (Permanent) Building Society charged on 6 Dundela Avenue, Glenageary, Co. Dublin. *Nil. March 17, 1949.

Company News

British Aluminium Co., Ltd.

Profit of the British Aluminium Co., Ltd., for the year, amounted to £1,463,218. General reserve increased to £2,750,000 by an allocation of £125,000. Final dividend of 6 per cent recommended on Ordinary stock, making a total of 10 per cent.

Guest, Keen and Nettlefolds

A final ordinary dividend of 7 per cent, to make 11 per cent, less tax, for 1949, is announced by the board of Guest, Keen and Nettlefolds (6 per cent final in 1948). A bonus of 1½ per cent, less tax, on the ordinary stock is proposed to mark the 50th annual meeting on June 22. The 1949 group profit, net, was £2,888,098 (£2,918,682).

John Summers & Sons, Ltd.

The group profit, before tax, of John Summers & Sons, Ltd., for 1949 was £2,924,000 (£2,476,000 in 1948). The ordinary dividend of 8½ per cent is maintained. The chairman, Mr. R. F. Summers, said that the company's development scheme would cost £14-15 million and would be completed in about three years.

New Registrations

Alfred P. Cumming, Ltd.

Private company. (27,656). Capital £10,000. To acquire the business of chemical manufacturers carried on by J. R. Thomson & Co., Ltd., of 10 Blythswood Street, Glasgow, as "The Alpha Chemical Co." (but no other part of the business carried on by the said company). Director: E. R. Cumming. Reg. office: Woodside House, Blairmore, Argyllshire.

Evers & Wall, Ltd.

Private company. (481,511). Capital £100. Manufacturers of chemicals and insecticides, used for agriculture and for the preparation and preservation of foodstuffs; fertilisers, etc. Directors: C. E. St. John Evers, E. Wall. Reg. office: West Street, Aldbourne, nr. Marlborough, Wilts.

Ecam, Ltd.

Private company. (481,733). Capital £10,000. To acquire the business of a manufacturer of scientific glassware and apparatus, etc., heretofore carried on by Edward J. Camp at 227 and 229 St. George's Way, S.E.15, as Camp Industries. Directors: E. J. Camp, F. D. Edwards and A. S. D. Barrett. Reg. office: 227/228 St. George's Way, S.E.15.

Increases of Capital

The following increases in capital have been announced: Ibco Products, Ltd., from £100 to £5000; Redfearn Bros., Ltd., from £150,000 to £325,000; HILGAN PRODUCTS, LTD., from £2000 to £3500.

Changes of Name

The following changes of name have been announced: CROSFIELD, WATSON & GEORGE, LTD., becomes Crosfield (CWG), Ltd.; PHANTOSOL PRODUCTS, LTD., becomes Aerosol Products, Ltd.; D. & W. GIBBS (U.K.), LTD., becomes Price's Soap Co., Ltd.; PRICE'S SOAP CO., LTD., becomes D. & W. Gibbs (U.K.), Ltd.

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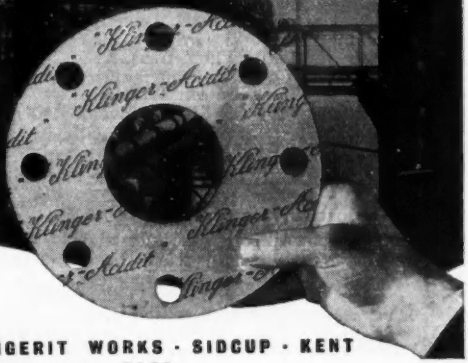

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OPEN DAYS AT CRL

IN order to disseminate as widely as possible information regarding the research work carried out at the Chemical Research Laboratory, DSIR, Teddington, Middlesex, a number of "open days" have again been arranged this year.

There will be four sessions: in the afternoons of Wednesday and Thursday, June 28 and 29, and on Friday, June 30, morning and afternoon.

These will provide opportunities for industry, other Government departments, universities and other research workers to visit the Laboratory and gain knowledge of the main branches of research, which are devoted to corrosion of metals; inorganic chemistry; radiochemistry; organic chemistry; high polymers and plastics; and microbiology.

The afternoon of June 28 has been set aside for representatives of industrial firms which have not previously received invitations, and the director would be pleased to receive applications up to June 19.

Irish Institute of Chemistry

AT the first annual general meeting of the Institiuid Ceimice na hEireann (the Institute of Chemistry of Ireland) attention was drawn to the fact that there was comparatively little representation of chemists on some of the principal organisations in Ireland.

The meeting stressed the contribution which the chemist can make to efficiency in industrial production, and it was noted with regret that this fact was apparently not appreciated by the Government. No chemist was appointed to either the Industrial Development Council or the Council of Education.

The meeting elected the following officers: President: Dr. A. G. G. Leonard; vice-president: Mr. W. V. Griffiths; hon. secretary: Mr. F. T. Riley; hon. treasurer: Mr. M. Cranley. Council members: Dr. V. Barry, Mr. D. Crowley, Prof. T. Dillon, Mr. D. T. Flood, Mr. G. F. O'Sullivan, Prof. T. S. Wheeler. Secretary: Mr. G. Martin Wheeler.

Industrial Electronics

A series of four lectures on industrial electronics is to be given by scientists of the Mullard Electronic Research Laboratories at The Engineering Centre, 351, Sauchiehall Street, Glasgow, C.2. The first,

(continued at foot of next column)

NEXT WEEK'S EVENTS

MONDAY, MAY 15

The Chemical Society

Oxford: Physical chemistry laboratory, 8.15 p.m. Alembic Club Lecture. Prof. A. R. Peters: "The Biochemistry of Fluoroacetate Poisoning and its Significance."

Electrodepositors' Technical Society

London: Northampton Polytechnic, St. John Street, Clerkenwell, E.C.1, 6 p.m. W. F. Overthrow: "Gilding."

WEDNESDAY, MAY 17

Oil and Colour Chemists' Association

London: Manson House, 26 Portland Place, W.1, 7 p.m. N. H. E. Ahlers (Paint Research Station): "Absorption Spectroscopy in Paint Research."

Incorporated Plant Engineers

London: Royal Society of Arts, John Adam Street, Adelphi, W.C.2, 7 p.m. R. S. Wilkins: "Applications of the Specialised Plant to Gas Turbine Research."

Society for Visiting Scientists

London: 5 Old Burlington Street, W.1., 7.30 p.m. Discussion meeting: "The Use of Radioactive Isotopes in Industry and Research." Chairman: Sir John Cockroft; speakers: W. J. Arrol, K. Fearnside and W. G. Marley.

THURSDAY, MAY 18

The Royal Society

London: Burlington House, Piccadilly, W.1, 4.30 p.m. F. Kidd (director, the Food Investigation Board): "Food Research Under the Department of Scientific and Industrial Research."

Incorporated Plant Engineers

Nottingham: Albert Hall Institute. Annual conference (3 days).

FRIDAY, MAY 19

The Royal Institution

London: 21 Albemarle Street, W.1, 3 p.m. F. P. Bowden: "Friction."

"Ultrasonics," by Dr. B. E. Noltingk, was delivered on May 11.

The other lectures, which will be at 7.30 p.m., are: (June 8) "Some Industrial Measuring Instruments," by Dr. H. A. Dell; (September 14) "Photoelectric Devices," by J. A. Jenkins; (October 12) "Vibration Test Methods and Measurements," by Drs. Dell and Noltingk.

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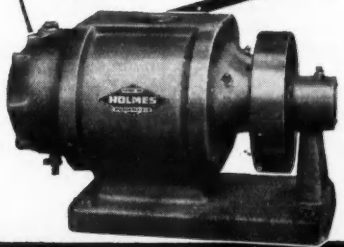

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Patent Processes in the Chemical Industry

The following information is prepared from the Official Patents Journal. Printed copies of specifications accepted will be obtainable, as soon as printing arrangements permit, from the Patents Office, Southampton Buildings, London, W.C.2. at 2s. each. Higher priced photostat copies are generally available.

Complete Specifications Accepted

Process of preparing penicillamine and its derivatives.—Merck & Co., Inc. March 13 1947. 638,513.

Aliphatic olefins and manufacture thereof. — California Research Corporation. April 16 1947. 638,514.

Polymerisable esters and polymers thereof.—N.V. De Bataafsche Petroleum Maatschappij. June 8 1947. 638,516.

Electrodeposition of metals or alloys.—Udylite Corporation. June 24 1947. 638,307.

Methods of preparing oxazolone derivatives and substituted acrylic acids.—Merck & Co., Inc. July 8 1947. 638,520.

Flame-resistant finish for fibrous cellulosic materials.—American Cyanamid Co. July 14 1947. 638,434.

Treatment of aluminium oxide coatings. —A. H. Stevens (Aluminium Co. of America). July 14, 1947. 638,374.

Production of alloys of an alkali metal and lead.—A. A. Johnson (trading as A. Johnson & Co.). July 18, 1947. 638,435.

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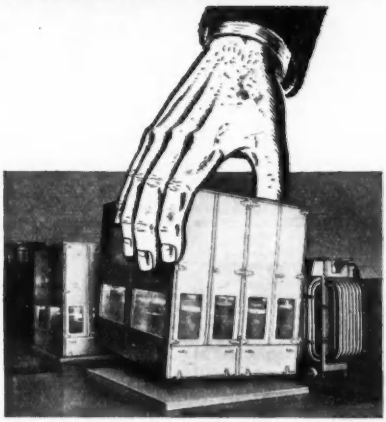

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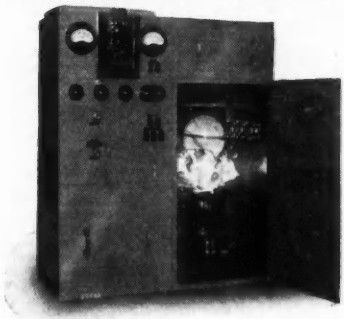

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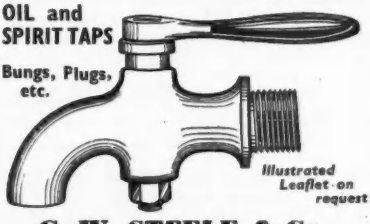

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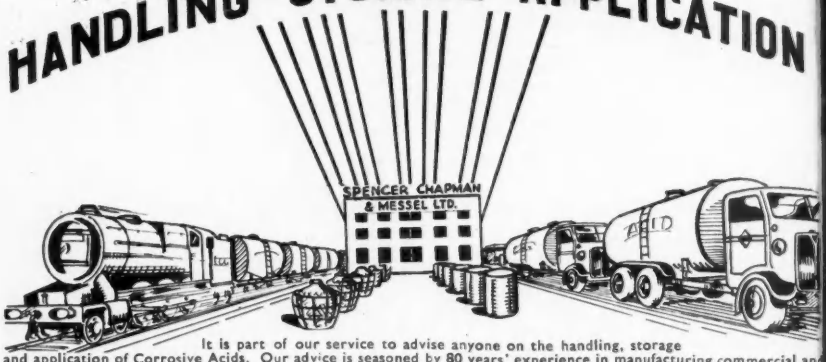

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